



411th BSB HEIDELBERG ASBESTOS MANAGEMENT PLAN

April 2004

ED-15-Asbestos Management Plan-040401.00-HDB-PLN

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1 INTRODUCTION AND BACKGROUND

Asbestos by definition is a group of naturally occurring minerals that consist of hydrated silicates, crystalline in structure, and occur as parallel bundles of minute fibers. When asbestos is physically disturbed, the bundles separate into individual fibers called fibrils. Inhalation or ingestion of these minute fibers can cause serious health problems or death. For this reason, asbestos laws and regulations have been developed to control asbestos hazards and to protect workers from asbestos exposure.

Asbestos has been widely used because it is a relatively inexpensive, virtually indestructible material with properties that make it useful in many forms and industrial/commercial applications. The following are some of the beneficial physical properties of asbestos:

Asbestos minerals are divided into two major groups: serpentine and amphibole. The serpentine group is characterized by a lattice structure and includes chrysotile, also known as white asbestos. Chrysotile, a hydrated magnesium silicate, is characterized by its fine, silky fibers, is flexible, and has a high tensile strength. Approximately 90 percent of all asbestos used in commercial and industrial applications from 1900 to the present consists of chrysotile asbestos fibers. Chrysotile was commonly used in a broad range of applications and products, including vinyl floor tiles, resilient floor coverings, gaskets, cementitious products, paper products, adhesive compounds, textiles, and roofing materials.

The amphibole group is characterized by chained silicates and includes amosite, crocidolite, tremolite, actinolite, and anthophyllite asbestos. Amosite, also known as grunerite or brown asbestos, is a hydrated iron magnesium silicate characterized by brittle fibers and has high resistance to heat. Amosite was used primarily in high-temperature applications such as structural fireproofing, electrical cable insulation, and thermal system insulation. Crocidolite, also known as blue asbestos, is a hydrated sodium magnesium iron silicate characterized by brittle and very strong fibers. Crocidolite was infrequently used in North America but commonly used in Europe, especially in textiles (e.g., fire blankets, felts, welding curtains) and filtration products.

1.1 PURPOSE AND OBJECTIVE

This plan is designed to define the scope of the asbestos management issues at the 411th Base Support Battalion (BSB) Heidelberg; to identify pre-abatement measures that can be implemented to mitigate potential exposures; and to develop a detailed asbestos abatement plan, if necessary. The objective of the Army Asbestos Management Program is to prevent human exposure to asbestos hazards on Army-owned or leased properties through proactive policies that comply with all applicable laws and regulations. The Program applies to friable and nonfriable ACM.

This Asbestos Management Plan (AMP) has been prepared for the 411th BSB in accordance with applicable U.S. Army Europe (USAREUR), U.S. Army, and U.S. Department of Defense (DoD) regulations and guidelines, as well as Final Governing Standards (FGS) for Germany and Host Nation (HN) regulations pertaining to asbestos management. The AMP shall be updated at least every five years. Should significant changes take place in the meantime, the AMP shall be updated as necessary. The procedures contained in this AMP are based on the regulatory requirements listed below, in descending order of their relative hierarchy of application for asbestos management.

- FGS for Germany
- USAREUR Regulations
- Army Regulations
- US Code of Federal Regulations (CFR), Title 29 (29 CFR) and Title 40 (40 CFR)
- Status of Forces Agreement (SOFA) and Supplementary Agreement

The laws and regulations governing asbestos management are continually changing and evolving; therefore, the procedures contained in this AMP must be reviewed and updated periodically to ensure compliance with emerging requirements.

This AMP is designed to be a working document assisting the asbestos program manager (APM) with administering the 411th BSB DPW-Environmental Management Office (EMO) asbestos program. Guidance for the development of this plan is taken from the DoD Environmental FGS.

If properly implemented, the AMP will provide a systematic approach to ensure a safe and healthy work environment for all employees and building occupants. It will also allow the 411th BSB to comply with Host Nation and DoD legal requirements.

1.2 APPLICABILITY

This Asbestos Management Plan applies to all installations, facilities, units, activities, and organizations within the jurisdiction of the 411th BSB, Heidelberg. The provisions of this plan apply to and should be followed by all personnel responsible for conducting or overseeing activities involving asbestos. This plan and its provisions apply to asbestos-related activities conducted under any contract issued by the 411th BSB. In addition, this plan and its provisions apply to the activities of other organizations or units from outside the 411th BSB that use training areas on or otherwise operate within the 411th BSB area of responsibility.

1.3 PLAN DISTRIBUTION AND MAINTENANCE

A copy of this AMP must be distributed to and maintained by each facility or unit within the BSB where asbestos hazards have been identified. Each person or group of persons responsible for asbestos management, including the staff of the BSB Environmental Management Office (EMO), the Safety Office and the installation commander, should maintain a copy of the plan. This plan should also be made available for on-site review by representatives of German agencies and contractors.

The 411th BSB Commander is responsible for ensuring that the plan is effectively implemented. A space is provided on the cover of this plan for BSB Commander's signature. If the 411th BSB Commander designates someone other than himself/herself to be responsible for this plan, he/she must be competent and qualified.

1.4 PLAN REVIEW AND UPDATING REQUIREMENTS

This section presents the requirements and procedures to be used by the 411th BSB for reviewing and updating this document. This plan will be reviewed and updated every five (5) years, unless major revisions are required. Areas that must be updated over time include the identity of key personnel, facility and equipment design, materials handled, handling methods, and changes in regulations or standards. Review of and updates to this plan will be conducted at the same level of authority (i.e., requiring BSB Commander signature) as the original.

Review means to systematically check this AMP for accuracy, effectiveness, relevance, and coverage. The review should be structured and documented, applying common sense and specific ongoing knowledge of installations and operations. The review should identify and revise significant operational or regulatory changes, as well as cosmetic, editorial, or supplementary information. Revisions to this plan may require training or implementation of other measures before the changes are authorized and distributed. These measures should be completed and thoroughly addressed before this plan is updated. If review of this plan does not identify revisions that need to be made, the person responsible for the review should document the lack of required update to the 411th BSB Commander. This review documentation must be retained with other records related to this plan.

The following planned or existing changes should be identified during the review and may result in revision of this asbestos management plan:

- Significant operational changes.
- Change in facility design, construction, operations, or maintenance in areas where ACM has been identified.

- Significant changes in the nature, size, or scope of off-installation activities that are covered by the plan for the installation where the organization is based.
- A change in key personnel in the asbestos management program.
- Significant improvements or deficiencies identified by surveillance and re-inspection.
- Non-critical personnel changes, editorial revisions, and other changes not specifically relevant to asbestos. These changes can be included with the next regular revision.

The 411th BSB Commander must authorize any changes to this plan in writing before it is updated. This plan and its updates take effect on the date signed by the 411th BSB Commander, which should be after DPW EMO review. Properly authorized updates will be immediately distributed with clear handling instructions to each person who maintains a copy of this plan (hereafter referred to as a “plan holder”). Plan holders are responsible for ensuring that updates and revisions are immediately included in their copies. In addition, each plan holder is responsible for implementing any required changes to operations and training in a timely manner.

1.5 AUTHORITY AND KEY REGULATORY REQUIREMENTS

The procedures contained in this AMP are based on numerous U.S., DoD, U.S. Army, USAREUR, and German laws, regulations, policies, and other guidance. The key regulatory requirements are noted below, in descending order of their relative hierarchy of application for asbestos management activities. These documents should be kept current at the BSB and be readily available to personnel who are responsible for the asbestos management program. A more comprehensive list of references is presented in Section 12.

- German Final Governing Standards (FGS), January 2003

Chapter 5, Hazardous Material

Chapter 6, Hazardous Waste

Chapter 15, Asbestos and Artificial Mineral Fibers

TECHNICAL REGULATIONS FOR HAZARDOUS MATERIALS (TRGSSs)

TRGS 100	Ausloeseschwelle fuer gefaehrliche Stoffe
TRGS 102	Technische Richtkonzentration (TRK) fuer gefaehrliche Stoffe
TRgA 120	Ausloeseschwelle fuer krebserzeugende Arbeitsstoffe

TRGS 400	Anforderungen an Messtelle zur Durchfuehrung der Messungen gefaehrlicher Stoffe in der Luft am Arbeitsplatz
TRGS 402	Ermittlung und Beurteilung der Konzentration gefaehrlicher Staube in der Luft in Arbeitsbereichen
TRGS 403	Bewertungen von Stoffgemischen in der Luft am Arbeitsplatz
TRGS 415	Tragezeitbegrenzung von Atemschutzgeraeten
TRGS 507	Oberflaechenbehandlung in Raeumen und Behaeltern
TRGS 514	Lagern sehr giftiger Stoffe in Verpackungen und ortsbeweglicher Behaelter
TRGS 519	Asbest, Abbruch-, Sanierungs- oder Instandhaltungsarbeiten (urspruenglich TRGS 517 Teil II Entwurf 3.90, Ausgabe 9.90, ueberarbeitete version 9.91)
TRGS 555	Betriebsanweisung und Unterweisung (3.89)
TRgA 560	Luft RUECKFUEHRUNG beim Umgang mit krebserzeugenden Arbeitstoffen (7.85)
TRgA 601	Ersatzstoffe fuer Asbest
TRGS 900	Maximale Arbeitsplatzkonzentration und biologische Arbeitsstofftoleranzwerte-MAK-Werte-Liste (5.90)
TRGS 910	Begrueundung fuer die Einstufung der krebserzeugenden Gefahrstoffe in die Gruppe I, II und III der Liste des Anhangs II NO. 1.1 Gefahrenstoffverordnung

BERUFGENOSSENSCHAFTEN (GESETZLICHE UNFALLVERSICHERUNG)

BGV A1	Allgemeine Vorschriften
BGV A4	Arbeitsmedizinische Vorsorge
BGV A5	Erste Hilfe
Schutzmassnahmen beim Umgang mit krebserzeugenden Arbeitstoffen	
	Gesundheitsgefahrdender mineralischer Staub
BGV A6	Fachkraefte fuer Arbeitssicherheit
BGV A7	Betriebsaerzte
BGV A8	Sicherheitskennzeichnung am Arbeitsplatz
	Muellbeseitigung
BGR 117	Richtlinien fuer Arbeiten in Behaeltern und engen Raeumen
BGI 505-30	Verfahren zur Bestimmung von Chrysotil und anderen Asbestarten

Verfahren zur Bestimmung von lungengaengigen Fasern
 BGI 505-46 Verfahren zur getrennten Bestimmung von lungengaengigen
 Asbestfasern und anderen anorganischen Fasern –
 Restelektronenmikroskopisches Verfahren
 Atemschutzmerkblatt
 BGR 121 Sicherheitsregeln fuer Anlagen zur Luftreinhaltung am
 Arbeitsplatz/Arbeitsplatzbelueftung
 Merkblatt Maskenpflege
 CHV 5 Gefahrstoffverordnung
 Einrichtung zum Abscheiden gesundheitsgefaehrdender Staeube und
 Rueckfuehrung der Reinluft in die Arbeitsraeume
 Sicherheitsregeln fuer Arbeiten an und auf Daechern aus Wellplatten
 Arbeitssicherheitsgesetz
 Beaarbeitung von Asbestzementerzeugnissen
 Sicherheitsregeln fuer das Entfernen von Asbest
 Sicherheit bei Abbrucharbeiten
 Staubmessung und Beurteilung
 Verordnung ueber Arbeitstaetten
 Regeln fuer Messung und Beurteilung gesundheitsgefaehrdender mineralischer
 Staeube
 Spezifische Einwirkungsdefinition
 Verzeichnis gepruefter Atemschutzgeraete
 Sicherheitsregeln fuer staubemittiernde handgefuehrte Maschinen und Geraete
 zur Bearbeitung von Asbestzementerzeugnissen

ALLGEMEINE GESETZE (veroeffentlicht im Bundesgesetzblatt)

AbfG Abfallgesetz, Fassung 12.02.1990
 AbfRestUeberwV Abfall- und Reststoffueberwachungs-Verordnung vom
 03.04.1990
 Arbeitsstaettenrichtlinien des Bundesarbeitsministeriums
 ArbStaettV Arbeitsstaettenverordnung vom 20.03.1975, zuletzt geaendert
 durch Verordnung vom 01.08.1983
 ArbStoffV Arbeitsstoffverordnung ueber gefaehrliche Arbeitsstoffe
 ASiG Arbeitssicherheitsgesetz
 BekV Berufskrankheitenverordnung vom 20.06.1968, zuletzt geaendert
 22.03.1988

BimSchG Bundesimmissionsschutzgesetz zum Schutz vor schaedlichen Umwelteinwirkungen durch Luftverunreinigung, Geraeusche, Erschuetterungen u. ae. Vorgaenge

ChemG Chemikaliengesetz

GefStoffV Gefahrenstoffverordnung

GGVS Gefahrstoffverordnung Strasse

GSG Geraeteschutzgesetz Gesetz ueber technische Arbeitsmittel

TA-Abfall Technische Anleitung Abfall

TA-Luft Technische Anleitung zur Reinhaltung der Luft

WHG Wasserhaushaltsgesetz

ALLGEMEINE GESETZE UND VERORDNUNGEN

durch Bekanntgabe der Bundeslaender

Asbest-Richtlinie Richtlinie fuer die Bewertung und Sanierung schwachgebundener Asbestprodukte in Gebaeuden

AsbestEinV Asbesteinschraenkungsverordnung, Verordnung zur Einschraenkung der Verwendung asbesthaltiger Baustoffe (Bayern, 27.07.87)

VerwaltungsVO ueber die Kennzeichnung und Verwendung von Asbest (Baden Wuerttemberg, 01.02.83)

LAGA Merkblatt der Laenderarbeitsgemeinschaft zur Entsorgung asbesthaltiger Abfaelle (1989)

LBO Landesbauordnungen der Bundeslaender

VOB Verdingungsordnung fuer Bauleistungen

VDI 2262 Staubbekaempfung am Arbeitsplatz

VDI 3492 Konzept und Methode zur Messung von Asbestfasern in der Luft. Rasterelektronenmikroskopisches Messverfahren

VDI 3861 Manuelle Asbeststaubmessung im stroemenden Reingas

WEITERE BROSCHUEREN UND MERKBLAETTER

GEA Gueteschutz-Asbestsanierung, Vorlaeufige Guete- und Pruefbestimmungen der Gueteschutzgemeinschaft fuer Asbestdemontage und Entsorgungstechnik

Sicherheit bei Verwendung von Asbest (S 25)

Broschuere der Bundesanstalt fuer Arbeitsschutz Sanierung asbesthaltiger Bauteile (GA 26)

Broschuere der Bundesanstalt fuer Arbeitsschutz

Verzeichnis gepruefter Atemschutzgeraete

AMTSBLAETTER UND RICHTLINEN DER EUROPÄISCHEN GEMEINSCHAFT

- L 194/97-49 Richtlinie des Rates ueber Abfaelle
- L 84/43-48 Richtlinie des Rates ueber giftige gefaehrliche Abfaelle vom 20.03.1978
- L 263/33-36 Richtlinie des Rates vom 19.03.1983 zur Aenderung der Richtlinie 76/769/EWG zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliederstaaten fuer Beschraenkungen des Inverkehrbringens und der Verwendung gewisser gefaehrlicher Stoffe und Zubereitungen
- L 188.20 Richtlinie des Rates von 19.03.1987 zur Verhuetung und Reinigung der Umweltverschmutzung durch Asbest
- L 83/477 Richtlinie des Rates vom 17.09.1987 ueber den Schutz der Arbeitnehmer gegen Gefaehrung durch Asbest am Arbeitsplatz (zweite Einzelrichtlinie)
- EN 45.000 Zeitlich befristete Akkreditierung von Laboratorien (in Vorbereitung)

The above information may be procured through the following sources:

Carl Heymann Verlag KG	Beuth Verlag GmbH
Luxemburger Str. 449	Burggrafenstr. 6
50939 Koeln 41	10787 Berlin 30

- USAREUR Regulation (UR) 200-1, USAREUR Environmental Quality Program, December 1993.
 - Chapter 5, Hazardous Materials Management Program
 - Chapter 6, Solid and Hazardous Waste Management Program
 - Chapter 10, Asbestos Management Program
- Army Regulation (AR) 200-1, Environmental Protection and Enhancement, 21 February 1997.
 - Chapter 4, Hazardous Materials Management
 - Chapter 5, Hazardous and Solid Waste Management
 - Chapter 8, Asbestos Management
 - Chapter 14, Army Environmental Program in Foreign Countries
- 29 CFR 1910

- 29 CFR 1926.1101, Asbestos
- 40 CFR 763, Asbestos Model Accreditation Plan
- Status of Forces Agreement (SOFA) and Revised Supplementary Agreement (RSA), 29 March 1998.

The laws and regulations governing the management of asbestos are continually changing and evolving. Therefore, the procedures contained in this asbestos management plan must be updated periodically (see Section 1.4).

2 GENERAL BSB INFORMATION

The 411th BSB Heidelberg is part of the 26th ASG and is located in south central Germany, primarily in the state of Baden-Wuerttemberg. The exception is Germersheim Army Depot, located in the state of Rheinland-Pfalz. The Heidelberg Military Community is primarily a headquarters area for the U.S. Army, Europe (USAREUR). There is a total of 20 installations consisting of 886 buildings in the 411th BSB. The buildings house a number of activities including Community Support, Family Housing, Administration, Schools, Day/Youth Care and Vehicle Maintenance.

2.1 411TH BSB LOCATION AND MISSION

The Community Commander for the 411th BSB Heidelberg is located in Building 101, Patton Barracks, Heidelberg.

The 411th BSB's mission is to provide BASOPS, Force Protection and Command and Control to personnel and units in the BSB's Area of Responsibility (AOR). On order, execute operations to support deployments, Reception, Staging and Onward Movement (RSO) of forces in the BSB's Area of Responsibility (AOR). The vision is to be the Army's premier community, providing the best quality of life services for our soldiers, civilians and family members every day.

List of installations in the 411th BSB:

GE12F	Campbell Barracks	Heidelberg
GE658	Patton Barracks	Heidelberg
GE35B	Army Airfield	Heidelberg
GE33J	Hammonds Barracks	Seckenheim
GE76P	Stem Kaserne	Seckenheim
GE19P	Edingen Radio Relay Facility	Edingen
GE46F	Koenigstuhl Radio Relay Station	Koenigstuhl
GE34G	Nachrichten Kaserne	Heidelberg
GE52L	Mark Twain Village	Heidelberg
GE34J	Community Support Center	Heidelberg
GE34E	AFN Relay Station	Heidelberg

GE34F	Golf Course	Oftersheim
GE62S	Small Arms Range	Oftersheim
GE846	Tompkins Barracks	Schwetzingen
GE45D	Kilbourne Kaserne	Schwetzingen
GE654	Patrick Henry Village	Heidelberg
GE30J	Germersheim Army Depot	Germersheim
GE30G	Germersheim RTO	Germersheim
GE80B	Stocksberg Radio Relay Facility	Stocksberg
GE76L	Schwetzingen Training Area	Schwetzingen

List of Tenant Units in the 411th BSB:

181ST SIG	AFOD
181ST SIG (SEC)	AFOD (SEC)
1 ST PERSCOM	AMC-EUROPE
1 ST PERSCOM (SEC)	AMC-EUROPE (SEC)
202D MP GP (CID)	CONTRACTING COMMAND
208TH FINANCE BN	CONTRACTING COMMAND SEC)
208TH FINANCE BN	DEFENSE DIST. DEPOT EUROPE
208TH FINANCE BN (SEC)	DEFENSE DIST. DEPOT EUR. (SEC)
208TH FINANCE BN (SEC)	DET B, 510TH PSB
214TH AVN CO	DET B, 510TH PSB (SEC)
214TH AVN CO (SEC)	ERMC (SEC)
266TH FINANCE COMMAND	EUROPEAN REGIONAL MEDICAL CTR.
266TH FINANCE COMMAND (SEC)	HDENTAC
26TH ASG	HDENTAC (SEC)
26TH ASG (SEC)	HHC, 1ST PERSCOM

2 ND PLT, 510TH POSTAL	HHC, 266TH FC
2 ND PLT, 510TH POSTAL (NCOIC)	HHC, 266TH FC (SEC)
302 MI BN	HHC, 26TH ASG
302 MI BN (SEC)	HHC, 26TH ASG (SEC)
30TH MED BDE	HHC, 30TH MEDICAL BDE
30TH MED BDE (SEC)	HHC, 30TH MEDICAL BDE (SEC)
43d SIGNAL BN	HHC, 93D DENTAL BN
43d SIGNAL BN (SEC)	HHC, DENTAC
4 TH PLT, 249TH ENG DET	HHC, DENTAC
503D CHEM DET	HHC, JHQ-CENTRE
503D CHEM DET (XO)	HHC, JHQ-CENTRE
510TH POSTAL	HHC, MEDDAC
510TH POSTAL	HHC, USAREUR & 7th ARMY
527TH MI BN	HHC, V CORPS STB
529TH MILITARY POLICE	HMEDDAC
5 TH MP DET (CID)	HMEDDAC (SEC)
64TH MED DET (VS)	JHQ-CENTRE'
66TH MI DET	JHQ-CENTRE' (NCO)
7 ARCOM (ADJ)	USAREUR BAND
7 TH ARCOM	USAREUR BAND (SEC)
7 TH ARCOM	V CORPS STB
93D MED BN (DS)	V CORPS STB (SGM)
93D MED BN (DS) (NCOIC)	V CORPS ARTY

2.2 411TH BSB PHYSICAL CHARACTERISTICS

The 411th BSB consists of a population of 14,186 and covers 1573 acres.

The installations range in size from a building (AFN Transmitter, Heidelberg) to fairly large installations (Germersheim Army Depot, Patrick Henry Village).

There are 886 buildings with a total of approximately 11 million square feet. This does not include 126 leased buildings. These range from small storage sheds to 150,000 Sq. Ft. Warehouse Facilities.

Table 2-1 Size by Installation

INSTALLATION	GROSS SQ. FT.	ACRES
CAMPBELL BARRACKS	933,731	42.11
EDINGEN RRF	3,369	44.92
GERMERSHEIM RTO FACILITY	190	2.77
GERMERSHEIM ARMY DEPOT	2,014,263	454.47
HAMMONDS BARRACKS	257,538	17.17
AFN RELAY FACILITY	651	0.4
HEIDELBERG GOLF COURSE	15,458	125.33
NACHRICHTEN KASERNE	548,781	23.08
COMMUNITY SUPPORT CENTER	428,824	26.8
HEIDELBERG ARMY AIRFIELD	66,852	44.91
KILBOURNE KASERNE	97,349	13.37
KOENIGSTUHL RRF	20,929	5.31
MARK TWAIN VILLAGE	2,037,192	74.92
SMALL ARMS RANGE	12,106	34.97
PATRICK HENRY VILLAGE	3,239,787	250.4
PATTON BARRACKS	738,327	36.59
SCHWETZINGEN TRAINING AREA	1,273	276.6
STEM KASERNE	67,497	10.32
STOCKSBERG	1,191	0.42
TOMPKINS BARRACKS	680,479	88.48

Most of the buildings that belong to the 411th BSB, Heidelberg are permanent structures built in the 1930's, or early 1950's and constructed using concrete, stone, bricks, plaster, terrazzo flooring, wood truss systems and clay tile roofs. They range from single story to four story structures.

Semi-permanent facilities consist primarily of single story prefabricated structures built in the late 1970's and 1980's using wood flooring, vinyl floor covering or

carpeting, drywall with sound insulation, aluminum sheathing and sheet metal roofs.

3 PROGRAM ORGANIZATION AND ADMINISTRATION

The asbestos management program at the 411th BSB, Heidelberg will be collectively administered by the Asbestos Management Team (AMT). The AMT will rely primarily on the efforts of the BSB Asbestos Program Manager (APM) to carry out policy developed by the AMT and bring asbestos concerns to the attention of the AMT. However, the cooperation of all BSB community members will make it easier to implement an effective asbestos management program.

3.1 BSB ASBESTOS MANAGEMENT TEAM

The 411th BSB has established an AMT to oversee asbestos management at the BSB level. The AMT holds meetings quarterly as part of the EQCC meeting to review the status of the BSB Asbestos Management Program, identify problem areas, and prepare future action plans, as required. Copies of the BSB AMT meeting minutes, which are part of the EQCC minutes, are maintained by DPW-EMO and will be provided to the EQCC/AMT members of the BSB.

An important function of the BSB AMT is to ensure that the proper training programs are implemented and that personal protective equipment is provided to government workers who may be exposed to asbestos while performing their assigned duties. It is the duty of the AMT to assist in procurement of personal protective equipment, including respirators, for these workers by providing information on suppliers. An additional responsibility of the BSB AMT will be to establish and monitor the BSB medical surveillance program. All government workers who are required to wear respirators as part of their assigned duties should be enrolled in the medical surveillance program.

The table below lists the names, AMT titles/responsibilities, office location, and phone number of the current members of the 411th BSB AMT.

Table 3-1 BSB AMT Members

TEAM MEMBER	OFFICE & LOCATION	PHONE
MAJ Stephan A. Capps Director, DPW	DPW 411 th BSB, Heidelberg Building 3962, DPW Compound	Civ: 06221-4380-3100 DSN: 387- 3100 Fax 387-3109
Mr. Dan Welch Chief, DPW-EMO	DPW-EMO 411 th BSB, Heidelberg Building 3962, DPW	Civ: 06221-4380-3140 DSN: 387-3140 Fax: 387-3149

TEAM MEMBER	OFFICE & LOCATION	PHONE
	Compound	
Ms. Yvonne Lamy Asbestos Program Manager	DPW-EMO 411 th BSB, Heidelberg Building 3962, DPW Compound	Civ: 06221-4380-3143 DSN: 387-3143 Fax: 387-3149
Mr. Herbert Keilmann Safety Manager	411 th BSB, Heidelberg Building 3963, DPW Compound	Civ: 06221-57-1670 DSN: 370-1670 Fax: 370-7793
Mr. Mike Rogus Administrative Law Attorney	OSJA, V Corps Building 3736, Mark Twain Village	Civ: 06221-57-5184 DSN: 370-5184 Fax: 370-5897
Ms. Sofie Zach Attorney-Advisor	Chief, International Law Branch Building 3736, Mark Twain Village	Civ: 06221-57-5845 DSN: 370-5845 Fax: 370-5897
Ms. Karin Zuleger Public Affairs Office	HQ 26 th ASG, Heidelberg Building 110, Patton Barracks	Civ: 06221-17-1400 DSN: 373-1400 Fax:
Mr. Jochen Bauer	Civilian Personnel Advisory Center 411 th BSB, Heidelberg Building 3980, DPW Compound	Civ: 06221-57-7081 DSN: 370-7081
Mr. John McCoy Industrial Hygiene Program Manager	26 th ASG Industrial Hygienist Building 166, Patton Barracks	Civ: 06221-17-9438 DSN: 373-5258 Fax: 373-5258
Ms. Pat Kahn	Occupational Health Program Manager	Civ: 06221-17-9235 DSN: 373-9235 Fax: 373-6509

3.2 BSB AMT MEMBERS AND KEY ORGANIZATIONS

Members of the BSB AMT should consult the U.S. Army Environmental Hygiene Agency Technical Guide 157, Installation Asbestos Management Program Assessment Checklists, to ensure that all program requirements are met.

The 411th BSB, Heidelberg has established an AMT to oversee the management of asbestos at the BSB and installation level. The APM is responsible for the management and update of the program and for instituting a system of accountability to ensure compliance with legal, regulatory, and policy requirements pertaining to asbestos. The members of the AMT will ensure that accurate information concerning potential health risks associated with exposure to airborne asbestos fibers and dust is disseminated BSB-wide and that BSB personnel involved in the management and assessment of ACM receive adequate and appropriate training.

3.2.1 Asbestos Program Manager

The APM, appointed by the BSB commander, has the responsibility and authority to implement the asbestos program. The APM serves as the chair of the AMT at EQCC meetings.

The APM ensures that government workers are properly trained, oversees all asbestos activities, and maintains files containing asbestos records and documentation. The APM has the authority to clarify, define, and assign responsibilities to AMT members, including maintenance personnel and Activity Environmental Coordinators (AECs).

The APM is responsible for maintaining the asbestos register and a current database on the location of asbestos in 411th BSB facilities. The APM will notify the appropriate environmental regulatory agencies, to include the Legal Office and Preventative Medical Activities (PMA/IH), of any known or suspected hazardous exposure to asbestos. Because of the environmental regulatory interface task, this office, in coordination with PMA/IH, must be the focal point for all asbestos-related activities occurring in facilities under 411th BSB control. Additionally, this office will coordinate closely with the Real Property Section to ensure asbestos locations are properly annotated in real property records.

The APM is responsible for ensuring a records search is conducted of all facilities within the 411th BSB to identify those having a potential for containing asbestos. The APM is also responsible for the planning and accomplishment of facility surveys (in cooperation with the PMA/IH who will verify the presence or absence of ACM) identifying appropriate management measures (i.e., maintain in place, repair, remove, etc.), and ranking abatement activities. In-house DPW personnel, contractor personnel, or a combination of both, depending on qualifications, can accomplish the survey.

This survey allows a database to be developed on locations of known ACM sources. This survey is the initial step and will constantly change as new sources are found and old sources are updated and revised. The survey is actually an ongoing evaluation of locations and sources for ACM.

The APM is responsible for establishing an asbestos monitoring and maintenance program. The DPW staff (planners, shop personnel, etc.) will be critical in providing support for this effort. This portion of the overall asbestos program is designed to reduce the possibility of inadvertent exposure to ACM by maintaining a surveillance and inspection system over existing locations of ACM until ultimate removal/disposal. This program includes such items as labeling identified ACM, training facility managers to conduct surveillance of ACM in their facilities to check for deterioration, training custodial and maintenance workers, establishing special precautions before starting any maintenance, repair or construction activities and periodic surveillance by designated DPW personnel. It is imperative the PMA/IH assist the APM in setting up special health education programs in facilities where the presence of friable ACM has been established. Public Affairs can also be helpful in this phase of the program by publishing articles in the Heidelberg Military Community newspaper on perceived hazards from asbestos fibers, actions the asbestos management actually has taken to reduce the risk of asbestos exposure, and long-term surveillance activities for known asbestos locations.

The APM will ensure all ACM identified in facility surveys is documented in a database. This database is available on the BSB DPW Website to facility engineers, engineering designers, and planners so they are aware of the presence of asbestos at a project site. The APM is responsible for keeping the database current and complete, which makes it imperative the APM and PMA/IH coordinate their asbestos activities.

The APM is responsible for establishing appropriate training in asbestos identification and procedures for those personnel involved in management activities and facility managers involved in the O&M program.

The APM will inform the Environmental Legal Advisor of all 411th BSB actions involving asbestos and provide immediate notification of all potential violations.

The APM will ensure properly containerized asbestos stored in a secure area is disposed of in accordance with applicable regulations.

The APM will notify the appropriate environmental regulatory agencies, to include the legal office, of any known or suspected hazardous exposure to asbestos.

3.2.2 Directorate of Public Works (DPW)

The DPW provides insight from the perspective of employees responsible for the maintenance of buildings and grounds. 411th BSB and 26th ASG DPW personnel

should advise the APM on current building construction, repair, or renovation activities within the 411th BSB two weeks prior to the beginning of any work that may involve asbestos. The DPW Director will be the primary liaison between the AMT and DPW employees and contractors and will also be responsible for informing 411th BSB Army and civilian personnel about an abatement project and providing advance notification to affected personnel before the abatement commences.

3.2.3 Staff Judge Advocate

The Staff Judge Advocate (SJA) will provide legal insight to asbestos management issues. AMT members should consult the SJA on liability and regulatory compliance issues relating to an abatement project. In addition, the SJA may provide contracting oversight assistance when the BSB contracts asbestos abatement or renovation work.

3.2.4 Civilian Personnel Office and Works Council

The AMT representative from the Civilian Personnel Office (CPO) or Works Council should address any labor issues that arise when civilian employees are exposed to asbestos fiber releases.

3.2.5 Public Affairs Office

The BSB Public Affairs Office (PAO) will determine when the local community should be informed of asbestos issues. The PAO, with input from the AMT, will be responsible for determining the most appropriate methods to inform the community. The PAO will serve as the primary liaison between the general public and the AMT.

3.2.6 Safety Office

The BSB Safety Office will educate the AMT members on the current and most protective safety practices and control methods available in the asbestos industry. The Safety Office, which is responsible for monitoring the training and safety of the workers, will provide guidance on current practices and methods in use within the BSB and ways of ensuring the safety of workers handling asbestos. The Safety Office may provide a variety of training to workers in the BSB.

3.2.7 Health & Safety, PMA/IH

The H&S Engineer, as a member of the asbestos management team, has a major role in asbestos activities take place on 411th BSB assets. The PMA/IH is responsible for the health and welfare of the work force and building occupants concerning these activities. When requested, the H&S will act as a consultant on

any site evaluation involving maintenance, repair, or minor construction could result in exposure to asbestos.

When it is determined asbestos may be present and could be disturbed, the PMA/IH may be asked to conduct confirmation sampling and a risk assessment.

The PMA/IH is responsible for initiating and maintaining a medical monitoring program.

The PMA/IH will also support the DPW in the following activities, as resources allow: walk-through surveys, bulk sampling collection (sample collection can only be accomplished by the PMA/IH and/or certified contractors), asbestos confirmation and quantification, exposure assessment, hazard ranking, and recommendation for phased program corrective action.

3.2.8 Others

The Chief, BSB Design Services Branch shall attend EQCC/AMT meetings, as required. The Chief shall coordinate with the APM on any in-house projects that may involve disturbance of asbestos containing building materials.

Any design contracts that are processed by outside agencies such as the Regional Contracting Office, Seckenheim, The U.S. Army Corps of Engineers, Europe District, The Staatsbauamt, or the U.S. Air Force shall adhere to this management plan and coordinate with the APM on any projects that may involve disturbance of asbestos containing building materials.

3.3 SERVICE/WORK ORDER CONTROL SYSTEM

A service/work control system enables the APM to control work conducted by facility personnel and contractors that could disturb ACM. The work is controlled by setting up a system of checks and balances utilizing service order forms that automatically alerts workers through the IFSM system that ACM is present.

All service/work orders are reviewed weekly at the board of directors meetings, which the DPW-EMO office participates in.

All new construction projects must contain text in the contract documents to the effect that no asbestos is allowed in any materials installed. Contractors will provide certification that the project contains no ACM, prior to turnover to the government.

The APM will provide the 411th BSB DPW Work Reception & Scheduling Section with a list of buildings known to contain asbestos in electronic form from the DPW-EMO Website. (refer to Section 4.0). All work orders should originate in the Work Reception & Scheduling Section. Therefore, it will be the primary responsibility of the Work Reception & Scheduling Section to determine whether

further ACM investigation is needed before the requested work can begin. If work is requested in a building where ACM has been identified, then the Work Reception & Scheduling Section will notify the APM for further instructions. If work is requested and ACM is present, but not likely to be disturbed, the APM will note the location on the service request and reiterate the importance of not disturbing the area.

It is the responsibility of the APM, or his/her representative to review building plans and specifications to determine the extent of ACM disturbance and to ensure that all work performed meets the requirements of the AMP. The APM has the sole responsibility to either approve or disapprove the service request.

3.4 RECORD KEEPING

It is imperative that good record keeping practices be followed. Health effects related to asbestos exposure may not be observed for many years after the exposure. Therefore, good work practices must be combined with regimented record keeping procedures in order to limit potential future liability. Separate building file drawers have been established and are maintained by the APM for asbestos management program records and documentation. These files are located in Building 3962, DPW-EMO office at the DPW Compound in Heidelberg.

The following outline organizes record keeping requirements by various asbestos management concerns:

Asbestos Identification

- Documentation identifying the presence, location, and quantity of ACM.
- Documentation of ACM inventory, including urgency of abatement determinations.

Asbestos Inspection, Sampling, and Assessment

- ACM inspection and assessment reports.
- Suspect ACM sample collection data.
- Chain-of-custody documentation.
- Laboratory analytical results for suspect ACM samples supporting the positive/negative ACM determination.

ACM Surveillance

- ACM and/or PACM reinspection and reassessment reports.

Response Actions

- Documentation regarding the Asbestos Hazard Emergency Response Act (AHERA) ACM classification for all identified ACM and/or PACM is maintained by DoDDS in Wiesbaden for all schools in Europe.
- Documentation regarding the response action implemented for all identified ACM according to the Urgency of Abatement Scoring method using the German format.
- ACM removal documentation (e.g., work specifications, abatement designs, asbestos containing material removal permits, final inspection reports, clearance air sampling data and laboratory analytical results for all clearance air samples collected).

Notification

- Copies of all notification(s) provided to BSB personnel and building/facility occupants.
- Copies of all other information on ACM distributed to BSB personnel, building/facility occupants, or other individuals.

Training

- Training documentation for BSB personnel who require training.
- Accreditation documentation for BSB personnel who require accreditation.
- Training and accreditation documentation for contractor personnel performing asbestos work activities at the BSB.

Worker Protection

- Documentation of exposure assessments conducted at the BSB.
- Documentation of exposure monitoring conducted at the BSB.
- Copies of all exposure monitoring notifications provided to BSB personnel.
- Air sample collection data.
- Laboratory analytical results for all asbestos air samples collected.
- Written respiratory protection program.
- Documentation of respirator fit testing for BSB personnel who require fit testing.
- Medical examination records for BSB personnel who require medical surveillance.

Work/Service Order Control System

- Work/Service Order Authorization documentation.
- Written descriptions of engineering controls and work practices implemented during asbestos work activities.
- Written descriptions of site visits to observe and evaluate work practices implemented during asbestos work activities.

Asbestos-Containing Waste Disposal

- Waste shipment records, including asbestos waste manifests.

Asbestos in Drinking Water

- Drinking water monitoring records pertaining to asbestos monitoring.
- Laboratory analytical results for all asbestos drinking water samples.

Automotive Brake and Clutch Servicing

- Written procedures describing engineering controls and work practices implemented to control worker exposure to asbestos during automotive brake and clutch servicing. See SOP in Appendix E.

3.5 NOTIFICATION

A notification program has been developed to inform workers, tenants, building occupants, visitors, and regulatory agencies of asbestos-related activities and hazards. Descriptions of the type and location of potentially friable ACM, and the means by which personnel will avoid disturbing the ACM, must be included in each notification. The following section serves as the public information sub plan required by UR 200-1.

The APM will inform all workers, tenants, and building occupants of ACM within their respective facilities via newsletter or community publication written in a language that is understandable to the person receiving the notification. The newsletter/publication will be issued at least annually, or when there is a change in the condition of the ACM in the facility.

Should ACM of any kind (Urgency Rating I, II or III) be identified in any family housing facility, the family housing office must be notified, as well as the building coordinator? Any area where ACM has been identified as UR I or II shall be closed off to the public until abatement measures have been instituted. See Appendix F.

The U.S. Army, as an employer, must immediately inform the personnel working with or otherwise handling asbestos and the Works Council or Personnel Council

if the area asbestos fiber concentration has exceeded 15,000 f/m³ at the workplace and provide an explanation for the occurrence. In the event work areas of employees not working with or handling asbestos are contaminated with asbestos, the aforementioned notification requirement applies if the asbestos fiber concentration at the work area exceeds 1,000 f/m³ (Poisson Method).

The APM will provide written notification to visitors and contractors regarding the presence of ACM and specific procedures to be followed. Visitors and contractor employees (e.g., painters, HVAC technicians, roofers, electricians, and plumbers) should read the notification, and each individual should sign an acknowledgement form stating that they have read and understand the notification. A sample notification form is included in Appendix A of this document. Copies of the acknowledgements shall be maintained on file for the period of performance of the specific contract.

All contracts dealing with asbestos abatement shall be adequately worded to require the contractor to notify the proper regulatory agencies. Otherwise, the APM is responsible for notifying the appropriate regulatory agencies. The following is a list of local regulatory agencies that require notification:

Table 3-2 Regulatory Agencies Requiring Notification

ORGANIZATION OR AGENCY	POC & TITLE	ADDRESS/LOCATION	PHONE
Gewerbeaufsichtsamt	Herr Schmieg, Building Inspector	Postfach 101238 68012 Mannheim	0621-2924590 or 2924592 Fax 0621-2924617

4 ASBESTOS SURVEY/INSPECTION AND ABATEMENT

The following sections provide asbestos management information specific to each of the 20 installations within the 411th BSB. General information regarding the BSB was presented in Section 2.0 of this plan.

Asbestos inspections/surveys were previously performed in order to identify the presence of ACM in/on 411th BSB, Heidelberg real property in accordance with FGS requirements. Table 4-1 lists all contractors or in-house personnel that have conducted asbestos inspections or surveys, the date that the inspection/survey was performed, and the location of the original inspection/survey documentation.

Table 4-1 Previous Asbestos Inspection/Survey Information

SURVEY PERSONNEL OR CONTRACTOR'S COMPANY	INSTALLATION DATE(S) OF SURVEY	LOCATION OF SURVEY RESULTS
TÜV Stuttgart Woodward-Clyde – Tel. 06103-93890 Hygenetics Pickering Dames & Moore – Tel. 06103-93890 Schwarz, Hanson & Partner (SHP)– Tel. 06039-931837, or 0173/8665775	Campbell Barracks 1986 1990, 1991 1990 1990 1993 1994, 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG.ARMY.MIL
Pickering Hygenetics Woodward-Clyde Law Environmental Schwarz, Hanson & Partner (SHP)	Patton Barracks 1990 1990 1991 1994 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG.ARMY.MIL
Hygenetics	Army Airfield 1990	DPW EMO WEB PAGE BSBDPW.HEIDELBERG.

SURVEY PERSONNEL OR CONTRACTOR'S COMPANY	INSTALLATION DATE(S) OF SURVEY	LOCATION OF SURVEY RESULTS
Schwarz, Hanson & Partner	1994, 1999	ARMY.MIL
Hygenetics Pickering Schwarz, Hanson & Partner	Hammonds Barracks 1990 1990 1994, 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
Hygenetics Schwarz, Hanson & Partner	Stem Kaserne 1990 1994, 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
Hygenetics Schwarz, Hanson & Partner	Edingen RRF 1990 1994, 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
Hygenetics Woodward-Clyde Schwarz, Hanson & Partner	Königstuhl RRS 1990 1991 1994, 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
Hygenetics Woodward-Clyde Schwarz, Hanson & Partner	Heidelberg Hospital 1990 1991 1994, 1999, 2003	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
TÜV Stuttgart Woodward-Clyde Hygenetics Pickering Schwarz, Hanson & Partner Bucharth-Horn/SHP	Mark Twain Village 1986 1996, 1997 1990 1990 1997 2003	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
TÜV Stuttgart Hygenetics	Community Support Center 1986	DPW EMO WEB PAGE BSBDPW.HEIDELBERG.

SURVEY PERSONNEL OR CONTRACTOR'S COMPANY	INSTALLATION DATE(S) OF SURVEY	LOCATION OF SURVEY RESULTS
Schwarz, Hanson & Partner	1990 1994, 1999, 2003	ARMY.MIL
Schwarz, Hanson & Partner	AFN Relay Station 1994, 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
Hygenetics Schwarz, Hanson & Partner	Golf Course 1990 1994, 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
Hygenetics Schwarz, Hanson & Partner	Small Arms Range 1990 1994, 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
Pickering Hygenetics Woodward-Clyde Law Environmental Schwarz, Hanson & Partner	Tompkins Barracks 1990 1990 1991 1994 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
Hygenetics Schwarz, Hanson & Partner	Kilbourne Kaserne 1990 1994, 1999	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
TÜV Südwest Woodward-Clyde Hygenetics Schwarz, Hanson & Partner URS/SHP	Patrick Henry Village 1986 1990, 1996, 1997 1990 1999 2003 (20 Bldgs.)	DPW EMO WEB PAGE BSBDPW.HEIDELBERG. ARMY.MIL
	Germersheim Army Depot	DPW EMO WEB PAGE

SURVEY PERSONNEL OR CONTRACTOR'S COMPANY	INSTALLATION DATE(S) OF SURVEY	LOCATION OF SURVEY RESULTS
Schwarz, Hanson & Partner	1997, 1998	BSBDPW.HEIDELBERG.ARMY.MIL
Schwarz, Hanson & Partner	Stocksberg RRF 2001	DPW EMO WEB PAGE BSBDPW.HEIDELBERG.ARMY.MIL

4.1 PREVIOUS INSPECTION RESULTS AND URGENCY OF ABATEMENT SCORES

Appendix C contains the most recent results for all asbestos containing materials identified from the inspection/survey of each building within the 411th BSB, Heidelberg. Table 4-2 provides current information on asbestos containing materials that must be addressed within two years.

Table 4-2 Inspection/Survey Results Summary for Urgency Ratings I & II

BUILDING AND LOCATION	ACM type and Quantity	assessment date	analysis Results	urgency of abatement score
Campbell Bks. Building 60, Ground Floor	Fire Break Material 50 Each	2002	15% Chrysotile	I
Campbell Bks. Building 60, Ground Floor	Fire Break Material 50 Each	2002	50% Chrysotile	I
Campbell Bks. Building 60, Basement	Insulation Panel under Floor 50 Each	2002	25% Amosite	I
Campbell Bks. Building 7, Third Floor, Room 304	Door Gasket 5 M	2002	80% Chrysotile	II
Tompkins Bks. Building 4242, Basement	Pipe Insulation 450 M	2002	5% Amosite	II
Hospital	Pipe Insulation	2003	10% Chrysotile	II

BUILDING AND LOCATION	ACM type and Quantity	assessment date	analysis Results	urgency of abatement score
Building 3609, Attic	25 M		& 25% Amosite	
CSC Building 3850, 2 nd Floor	Fire Dampers 10 M ²	2003	30 % Amosite	II
Kilbourne Building 4312, 2 nd Floor	Wall Panel 200 M ²	2001	20 % Chrysotile	II
MTV Fam. Hsg. Building 3659 Utility Room	Cloth Thermal Insulation 4 EA	2003	80% Chrysotile	II
MTV Fam. Hsg. Building 3659 Utility Room	Pad Under Clamp 4 EA	2003	70% Chrysotile	II
MTV Fam. Hsg. Building 3665 Utility Room	Cloth Thermal Insulation 4 EA	2003	80% Chrysotile	II
MTV Fam. Hsg. Building 3665 Utility Room	Pad Under Clamp 4 EA	2003	70% Chrysotile	II
MTV Fam. Hsg. Building 3710 Attic	Pipe Insulation Debris 600 M ²	2003	20% Chrysotile	II
MTV Fam. Hsg. Building 3711 Attic	Pipe Insulation Debris 600 M ²	2003	20% Amosite	II
MTV Fam. Hsg. Building 3712 Attic	Pipe Insulation Debris 600 M ²	2003	20% Amosite	II
MTV Fam. Hsg. Building 3713 Attic	Pipe Insulation Debris 600 M ²	2003	30% Amosite	II
MTV Fam. Hsg. Building 3714 Attic	Tank Insulation Debris 4 M ²	2003	1% Amosite	II
MTV Fam. Hsg. Building 3714	Pipe Insulation Debris	2003	1% Amosite	II

BUILDING AND LOCATION	ACM type and Quantity	assessment date	analysis Results	urgency of abatement score
Attic	4 M ²			
MTV Fam. Hsg. Building 3715 Attic	Pipe Insulation Debris 600 M ²	2003	20% Amosite	II
MTV Fam. Hsg. Building 3717 Attic	Pipe Insulation Debris 550 M ²	1997	10% Amosite	II
MTV Fam. Hsg. Building 3718 Attic	Pipe Insulation Debris 450 M ²	2003	30% Amosite	II
MTV Fam. Hsg. Building 3720 Attic	Pipe Insulation Debris 600 M ²	2003	30% Amosite	II
MTV Fam. Hsg. Building 3721 Attic	Pipe Insulation Debris 550 M ²	2003	10% Amosite	II
MTV Fam. Hsg. Building 3721 Utility Room	Pipe Insulation 4 M	2003	10% Amosite	II
MTV Fam. Hsg. Building 3722 Attic	Pipe Insulation Debris 550 M ²	2003	10% Amosite	II
MTV Fam. Hsg. Building 3722 Utility Room	Pipe Insulation 15 M	2003	10% Amosite	II
MTV Fam. Hsg. Building 3722 Attic	Pipe Insulation 80 M ²	2003	10% Amosite	II
MTV Fam. Hsg. Building 3723 Utility Room	Cloth Thermal Insulation 4 EA	2003	50-95% Chrysotile	II
MTV Fam. Hsg. Building 3724 Attic	Pipe Insulation Debris 450 M ²	2003	30% Amosite	II
MTV Fam. Hsg. Building 3724 Attic	Pipe Insulation 150 M	2003	30% Amosite	II

BUILDING AND LOCATION	ACM type and Quantity	assessment date	analysis Results	urgency of abatement score
MTV Fam. Hsg. Building 3724 Attic	Tank Insulation 5 M ²	2003	30% Amosite	II
MTV Fam. Hsg. Building 3725 Attic	Pipe Insulation Debris 450 M ²	2003	30% Amosite	II
MTV Fam. Hsg. Building 3725 Attic	Pipe Insulation 150 M	2003	30% Amosite	II
MTV Fam. Hsg. Building 3726 Attic	Pipe Insulation Debris 450 M ²	2003	10% Amosite	II
MTV Fam. Hsg. Building 3726 Attic	Pipe Insulation 15 M	2003	10% Amosite	II
MTV Fam. Hsg. Building 3726 Attic	Tank Insulation 5 M ²	2003	10% Amosite	II
MTV Fam. Hsg. Building 3727 Attic	Pipe Insulation Debris 550 M ²	2003	5% Amosite	II
MTV Fam. Hsg. Building 3728 Attic	Pipe Insulation Debris 550 M ²	2003	10% Amosite	II
MTV Fam. Hsg. Building 3738 Utility Room	Cloth Thermal Insulation 4 EA	2003	30% Chrysotile	II
PHV Admin. Building 4517 Basement	Boiler Gasket 50 M	1998	80% Chrysotile	II
PHV Admin. Building 4750 Basement	Boiler Gasket 50 M	1998	90% Chrysotile	II

Only the materials that were found to contain friable asbestos are listed, and the Urgency of Abatement Scores have been determined and included for each listed

ACM. The urgency of abatement action was determined using the Asbestos Products Assessment of the Urgency of Abatement form (refer to Appendix A). For ACM classified as Priority Level I (80 points or more), immediate abatement or implementation of temporary measures to reduce airborne asbestos concentrations is required. For ACM classified as Priority Level II (70 to 79 points), the need for abatement is only required when subsequent reassessment result in Priority Level I. The product score should be reassessed every two years. For ACM classified as Priority Level III (less than 70 points), the product score should be reassessed every five years. Personnel responsible for implementing response actions should refer to the original survey results before renovation or abatement work is conducted in any buildings identified as containing ACM.

4.2 ABATEMENT ACTIVITIES

Prior to the initiation of demolition, renovation, or maintenance work, a determination must be made of whether ACM will be encountered during planned or anticipated activities. If there is any doubt as to whether ACM is present, a sample of the suspect material will be collected by a certified person approved by the Asbestos Program Manager and analyzed.

Before disturbing or demolishing a facility or part of a facility, actions will be taken to remove all friable ACM, or ACM with a high degree of probability of becoming friable once disturbed during demolition. ACM must be removed if it poses a threat to release airborne asbestos fibers and cannot be reliably repaired or isolated. Responsible individuals and members of the BSB AMT must ensure that adequate personnel and technical safety equipment are provided for the performance of demolition and remediation activities.

A work plan must be developed before the demolition of structural facilities or the removal of ACM from buildings and equipment. The work plan must describe the required worker protection measures as well as the specific methods of ACM removal and disposal that will be employed. When demolition or extensive renovation is planned, the following must occur:

- a. Responsible personnel must determine whether the planned demolition/renovation will remove or disturb ACM.
- b. Prior to the start of demolition or renovation activities that involve the removal or disturbance of ACM, a written assessment, i.e. Work Plan, of the demolition/renovation action must be prepared and provided to the Asbestos Program Manager. A copy of the assessment must also be kept on permanent file.
- c. Before disturbing or demolishing a facility or part of a facility, actions will be taken to remove all friable ACM and ACM with a high degree of probability of becoming friable once disturbed during demolition.

The databases maintained in Appendix C contain information (see Comments Column) on abatement activities that have been conducted in the 411th BSB, Heidelberg. Complete files pertaining to asbestos abatement projects are maintained in the DPW-EMO office at the DPW Compound, Building 3962.

4.3 RECOMMENDED MANAGEMENT ACTIONS

Table 4-4 summarizes the recommended management actions to be taken on ACM at the 411th BSB, Heidelberg. Recommended management actions may include, but are not limited to: abatement, encapsulation, enclosure, reassessment, O&M, and repair.

Table 4-3 Recommended Asbestos Management Actions for Urgency Ratings I & II (Reassessment must be performed every two years)

INSTALLATION	ACM TYPE	LOCATION	RECOMMENDED ACTION
Tompkins Bks. Bldg. 04242	Pipe Insulation	Basement	Remove, or Reassess in FY 2004
Hospital Bldg. 03609	Pipe Insulation	Attic	Remove, or Reassess in FY 2005
Kilbourne Kaserne Bldg. 04312	Wall Panel	2 nd Floor	Remove, or Reassess in FY 2003
MTV Fam. Hsg. Bldg. 03658	Cloth Thermal Insulation	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03658	Pad Under Clamp	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03659	Cloth Thermal Insulation	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03659	Pad Under Clamp	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03661	Cloth Thermal Insulation	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03661	Pad Under Clamp	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03662	Cloth Thermal Insulation	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03662	Pad Under Clamp	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03663	Cloth Thermal Insulation	Utility Room	Remove, or Reassess in FY 2005

INSTALLATION	ACM TYPE	LOCATION	RECOMMENDED ACTION
MTV Fam. Hsg. Bldg. 03663	Pad Under Clamp	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03664	Cloth Thermal Insulation	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03664	Pad Under Clamp	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03665	Cloth Thermal Insulation	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03665	Pad Under Clamp	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03710	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03711	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03712	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03713	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03714	Tank Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03714	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03715	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03717	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03718	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03720	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03721	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03721	Pipe Insulation	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03722	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03722	Pipe Insulation	Utility Room	Remove, or Reassess in FY 2005

INSTALLATION	ACM TYPE	LOCATION	RECOMMENDED ACTION
MTV Fam. Hsg. Bldg. 03722	Pipe Insulation	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03723	Cloth Thermal Insulation	Utility Room	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03724	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03724	Pipe Insulation	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03724	Tank Insulation	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03725	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03725	Pipe Insulation	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03726	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03726	Pipe Insulation	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03726	Tank Insulation	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03727	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03728	Pipe Insulation Debris	Attic	Remove, or Reassess in FY 2005
MTV Fam. Hsg. Bldg. 03738	Cloth Thermal Insulation	Utility Room	Remove, or Reassess in FY 2005
PHV Admin. Bldg. 04517	Boiler Gasket	Basement	Remove, or Reassess in FY 2003
PHV Admin. Bldg. 04750	Boiler Gasket	Basement	Remove, or Reassess in FY 2003
Campbell Bks. Bldg. 00007	Door Lining	3rd floor, Room 304	Remove, or Reassess by FY 2004
Campbell Bks. Bldg. 00060	Fire Break Material	Ground Floor	Remove, or Reassess by FY 2004
Campbell Bks. Bldg. 00060	Fire Break Material	Ground Floor	Remove, or Reassess by FY 2004
Campbell Bks. Bldg. 00060	Insulation Panel Under Floor	Basement	Remove, or Reassess by FY 2004

INSTALLATION	ACM TYPE	LOCATION	RECOMMENDED ACTION
MTV Fam. Hsg. Bldg 03717	Pipe Insulation	Basement Utility Room	Remove or Reassess by FY 2004
MTV Admin. Bldg 03752	Door Gasket	Basement	Remove or Reassess by FY 2005
CSC Bldg. 03850	Fire Dampers	2 nd Floor	Remove, or Reassess by FY 2005
PHV Fam. Hsg. Bldg. 04418	Boiler Cover Insulation	Basement Utility Room	Remove, or Reassess by FY 2005
PHV Fam. Hsg. Bldg. 04420	Pipe Insulation	Basement Utility Room	Remove, or Reassess by FY 2005

Table 4-4 Recommended Asbestos Management Actions for Urgency Rating III's

INSTALLATION	ARLOC	BUILDING NOS.	RESURVEY DATE
Campbell Barracks	GE12E	00001-00099	2004 – W.O. # ENV-06025-2S
Patton Barracks	GE658	00103-0152 & 03852-03859	2004 – W.O. # ENV-06025-2S
Army Airfield	GE35B	00201-00242	2004 – W.O. # ENV-06025-2S
Hammonds Barracks	GE33J	00968-00993	2004 – W.O. # ENV-06025-2S
Stem Kaserne	GE76P	01000-01019	2004 – W.O. # ENV-06025-2S
Edingen RRF	GE19P	01031-01033	2004 – W.O. # ENV-06025-2S
Königstuhl RRS	GE46F	03580-03592	2004 – W.O. # ENV-06025-2S
Nachrichten Kaserne	GE34G	03600-03643	2004 – W.O. # ENV-06025-2S
MTV FH & Admin.	GE52L	03650-03799	2008 – W.O. # AFH-04388-2S
Community Support Ctr.	GE34J	03801-03994	2008 – W.O. # DPW-06754-2S
AFN Relay	GE34E	03973	2004 – W.O. # ENV-06025-2S
Golf Course	GE34F	04101-04112	2004 – W.O. # ENV-06025-2S
Small Arms Range	GE62S	04130-04142	2004 – W.O. # ENV-06025-2S
Tompkins Barracks	GE486	04206-04296	2004 – W.O. # ENV-06025-2S
Kilbourne Kaserne	GE45D	04303-04399	2004 – W.O. # ENV-06025-2S
PHV Admin.	GE654	04400-04811	2002– W.O. # DPW-06754-2S
Germersheim Phase I	GE30J	07510-07989	2002 – W.O. # DPW-06754-2S
Germersheim Phase II	GE30J	07510-07989	2003 – W.O. # ENV-06025-2S

5 WORKER PROTECTION

ACM generally does not pose a health risk to building/facility occupants when it remains intact and undisturbed. Through the proper management of ACM, the release of asbestos fibers into the air is prevented or minimized, and the risks of asbestos-related diseases can be reduced to negligible levels. The basis of worker protection in asbestos-related activities at the 411th BSB, Heidelberg is that, to the extent possible, using the best available technology, work procedures must be developed to prevent the release of asbestos fibers.

The 411th BSB has prepared asbestos awareness brochures that are made available to all community members. In addition, all ACM that has received Urgency Ratings (UR) of I or II have been labeled in both English and German and, in most cases, the areas closed off to the public until the material can be abated. In areas not closed off, the material has been encapsulated or enclosed. A number of materials rated as UR III's have also been labeled. This pertains primarily to wall and ceiling materials, but also items such as asbestos cement ventilation ducts.

5.1 HEALTH EFFECTS

ACM can present a health risk to building/facility occupants when the materials are damaged or disturbed, resulting in elevated airborne asbestos fiber concentrations.

Inhalation of asbestos fibers can cause certain respiratory ailments and diseases. To date, no safe level of asbestos exposure has been determined, and it is generally assumed that "zero" exposure is the level most protective of human health.

A feature common to all types of asbestos-related diseases is the long latency period (i.e., the length of time for the symptoms of a specific disease or condition to develop or appear after the initial exposure). The latency period for asbestos is 10 to 40 years. Specific diseases associated with exposure to asbestos include:

- Asbestosis (scarring of lung tissue, or pulmonary fibrosis);
- Mesothelioma (cancer of the pleural lining of the peritoneal cavity);
- Lung cancer; and
- Gastrointestinal tract or digestive tract cancers.

5.2 GENERAL REQUIREMENTS

Prior to initiating work involving asbestos, medical monitoring, PPE determination, and health issues related to potential ACM exposure will be addressed to the appropriate DoD medical authority.

Asbestos abatement projects pose unusual hazards not commonly encountered in other types of construction-related activity. Protection of the health and safety of workers responsible for asbestos abatement will include, at a minimum, the following: awareness training, including the health effects associated with asbestos exposure; assignment of individual responsibility for required activities; selection and use of appropriate respiratory protection equipment; instruction in the care and use of respiratory protection equipment; and medical evaluation to determine appropriate work assignments.

Government employees who handle asbestos-containing hazardous substances must be informed of the potential risks and protective measures, and this information may be conveyed to the employees in the form of standard operating procedures (SOPs) and instruction that include the following information:

- Description of the work areas, workplace, and activity;
- Identification of hazards to humans and the environment;
- Special precautions and work restrictions for pregnant women and women of childbearing age;
- Protective measures, rules of conduct, and health measures;
- Conduct during an emergency;
- First aid measures; and
- Waste disposal.

Verbal instruction in SOPs must be provided before the government employee commences work and thereafter at least annually. The instruction must be relevant to the specific workplace. Female employees of childbearing age must be provided additional information regarding the potential hazards for expectant mothers and the restrictions to their employment activities.

The U.S. Army, as an employer, may not assign youths to work activities in which asbestos fibers may be released, including training or apprenticeship purposes. The employer may not assign expectant or nursing mothers to work activities in which they may be exposed to asbestos fibers. Responsible personnel should

seek guidance on worker protection related topics from the 411th BSB, Heidelberg Safety Office, the U.S. Army Center for Health Promotion and Preventative Medicine, Europe (CHPPM-EUR), or other DoD medical authority.

The U.S. Army, as an employer, shall provide personal protective equipment that is suitable for the substances that the government employees may be exposed to and shall maintain the equipment in a useful and clean condition.

5.3 MEDICAL SURVEILLANCE PROGRAM

The 411th BSB Heidelberg medical monitoring program is overseen by the Occupational Health Program Manager. If a person is exposed to asbestos (documented air sample, etc.) they are enrolled in an asbestos registry and will be followed per legal requirements from that point on for both US and Host Nation.

When asbestos related work is performed on the BSB by an outside contractor, it is the contractor's responsibility to ensure that all contractor abatement workers receive medical examinations in accordance with regulatory requirements. The contractor must provide a letter or similar documentation from the examining physician stating that the employee is medically fit to perform asbestos abatement work. Documentation must be submitted to the COR together with the contractor's work plan 2 weeks prior to start of work.

5.3.1 Respiratory Protection Program

The BSB must prepare and institute a Respiratory Protection Program (RPP) that includes the requirements stated in 29 CFR 1910.134, 29 CFR 1910.1001, 29 CFR 1926.1101, American National Standards Institute (ANSI) Z88.2, AR 11-34, and Medical Technical Bulletin (TB MED) 502. The OSHA regulation, 29 CFR 1910.134, requires that a written RPP be provided to all employees who may be exposed to airborne asbestos fiber. When planning asbestos abatement projects, the BSB AMT should consult the Army Respiratory Protection Program (ARPP), AR 11-34, which outlines the Army's organization of the program and Army personnel responsibilities, as well as the BSB-specific RPP.

Whenever the engineering controls and work practices that can be instituted are not sufficient to reduce exposure to or below the OSHA Permissible Exposure Limit (PEL) and/or excursion limit, the BSB must supplement these measures through the use of respiratory protection. The BSB is also required to establish and implement a written program to reduce exposure to or below the OSHA PEL and/or the excursion limit by means of engineering and work practice controls as required and by the use of respiratory protection as needed. The BSB must provide respirators and ensure that they are used when required. Additionally,

the BSB must take steps to ensure that employees maintain the respirators in a clean and useful condition.

Contractors must conduct a monitoring program in accordance with procedures established in “The Protection of Workers Against Asbestos Hazards at the Workplace,” published by the Federal Minister for Employment; DoD components may use other monitoring programs if they provide the employee the same or a greater level of protection, i.e. TRGS 400.

BSB and contractor employees who have been evaluated by a physician and approved to wear a respirator must undergo fit testing using the respirator assigned to them. Each employee must receive instruction in the proper use, care, and limitations of the respirator. Whenever the employee dons the respirator, he/she must perform both a negative and positive pressure test to ensure that a proper fit and an airtight seal are achieved. Employees utilizing negative pressure air purifying respirators must be free of facial hair that would interfere with the face piece seal.

The brake pad SOP presented in Appendix E describes how asbestos containing brake and clutch material is to be removed and when workers are required to wear respirators.

5.3.2 Recordkeeping

Records pertaining to the medical surveillance and respiratory protection programs for government employees are maintained by the Occupational Health Program Manager, Building 166, Patton Barracks, CMR 419, APO AE 09102, Telephone No. DSN 373-9235 (Civ. 06221-179235). Contractor medical and respiratory protection documentation is included with original files for abatement projects in the 411th BSB DPW-EMO office in Building 3962 at the DPW Compound.

5.4 WARNING SIGNS AND LABELS

Work areas in which the presence of asbestos fibers cannot be ruled out must be clearly partitioned from other areas and, to the extent practicable, must be sealed off dust-tight and marked with appropriate signs. Signs should be created and posted in accordance with *UVV Sicherheitskennzeichnung am Arbeitsplatz, VBG 125*, “Safety Markings in the Workplace” and the OSHA and USEPA worker protection regulations in 29 CFR 1910, 29 CFR 1926.1101, and 40 CFR 763. Warning signs should be provided in both the English and German languages. Asbestos containing building materials identified as Urgency Rating (UR) I’s or II’s shall also be labeled with stickers in both English and German. Wall and ceiling materials classified as UR III’s shall also be labeled.

6 ACM INSPECTION, ASSESSMENT, AND SURVEILLANCE

A consistent asbestos inspection, sampling, and assessment program is necessary to ensure both the quality and completeness of data generated. This section of the AMP addresses procedures associated with asbestos inspections, sampling of suspect ACM, and assessment of the hazards posed by ACM.

6.1 CONDUCTING ACM INSPECTIONS & SURVEYS

UR 200-1 requires the BSB to identify and maintain an inventory of the ACM present in USAREUR-controlled facilities. Chapter 15, Asbestos and Artificial Mineral Fibers, of the FGS for Germany requires the installation to develop an ACM inventory via sample analysis or visual determination.

DoDDS and CDC facilities must be inspected in accordance with AHERA requirements, and it is recommended that all other facilities be surveyed using AHERA requirements as a guideline in order to ensure the quality of data and consistency of methodology and results.

6.1.1 Inspection/Survey Methodology

Asbestos inspection and survey activities at 411th BSB buildings and facilities must always be conducted by an individual accredited (and generally licensed) to perform this type of work as dictated by the applicable regulations and the governing authority of the state or locality.

All accessible areas within a building/facility (or a particular renovation or demolition operation) must be visually inspected for suspect ACM. All locations of suspect ACM must be identified by the asbestos building inspector. All accessible suspect ACM must be touched by the asbestos building inspector to determine whether such materials are classified as friable.

Homogeneous areas of both friable and nonfriable suspect ACM must be identified by the asbestos building inspector. A homogeneous area is an area of suspect ACM that appears uniform in terms of color and texture. Each homogeneous area of suspect ACM must be (1) categorized by the inspector; (2) quantified in terms of area (e.g., square meters), length (e.g., linear meters), or item (e.g., each), depending on the type of suspect ACM; and (3) assigned a unique identification number.

At a minimum, the identification and inspection of suspect ACM shall document the following information:

- Damage determination (i.e., good condition, damaged, significantly damaged);
- Estimated percent damage;

- Localized/distributed damage;
- Potential for ACM contact by building/facility occupants;
- Influence of vibration on the ACM; and
- Overall potential for disturbance of the ACM.

Where deemed necessary and appropriate, photographs of ACM are recommended to document the location and condition of the ACM. Conditions where photographs are appropriate include: visible significant damage to suspect ACM; the presence of asbestos debris on surrounding surfaces; and instances when a photograph would assist in identifying or describing the ACM.

Each photograph should be assigned a unique photograph identification by the asbestos building inspector for reference purposes. The object and purpose of the photograph should also be documented.

6.1.2 Sampling and Analysis

The ACM inspection/survey will include collection of a sufficient number of representative bulk samples of the various types of suspect ACM identified by visual walk-through of the building or facility. Collection of bulk samples and repair of sampled areas will be conducted in accordance with current regulations, accepted industry standards, and BSB-specific SOPs. Only persons who are certified (by USEPA standards) or qualified (by HN standards) may collect samples. Persons collecting samples must use protective equipment appropriate to the type of suspect ACM being sampled and the conditions in the area being inspected/surveyed.

It is recommended that a minimum of three bulk samples be collected for each homogeneous area of friable suspect ACM when using the PLM method. One or two bulk samples is required when using the German REM method. A minimum of two bulk samples should be collected for each homogeneous area of nonfriable suspect ACM when using the PLM method. One bulk sample is required when using the German REM method. In addition, one quality control (QC) sample should be collected for every 20 samples or 1 per building when using the PLM method. One quality control (QC) sample should be collected for every 20 samples using the REM method. QC samples should be collected from the area immediately adjacent to the sample. If the QC samples submitted to the laboratory are grouped with the regular samples, the QC samples should be labeled as regular samples to prevent the laboratory from identifying them as QC samples.

All samples should be properly containerized in airtight vessels (e.g., sealable plastic bags, canisters) and labeled using a unique numbering system that is easily understood by the persons who will perform the ACM assessment based

upon the laboratory analytical results. The sampling documentation (e.g., field log, sampling report, chain of custody) must include the BSB and installation name, building number or facility name, room number (if applicable), location (e.g., distance measurements and directional indicators, triangulated reference points), date, unique sample identification number, name of sampler, and type of material sampled.

Samples should be shipped or delivered to the analytical laboratory in such a manner as to prevent the release of any asbestos fibers and to allow the samples to arrive at the laboratory in suitable condition for analysis. The method of analysis and turnaround time requested should be specified on the chain of custody.

Analysis of bulk asbestos samples using the PLM method should be performed by:

- a. DoD laboratories approved by the U.S. Army;
- b. OCONUS laboratories meeting German regulatory and accreditation requirements; or
- c. CONUS laboratories certified in accordance with USEPA requirements and participating in the National Voluntary Laboratory Accreditation Program (NVLAP).

Accredited Host Nation laboratories shall perform analysis of bulk asbestos samples using the REM method.

Asbestos can be distinguished from other natural and man-made fibers by its perfectly lengthwise cleavage and a length-to-width ratio of 3:1. The two most prevalent analytical methods for determining the presence of asbestos are polarized light microscopy (PLM) and scanning electron microscopy (SEM, or REM in Germany). PLM is an optical microscopic technique used to distinguish different types of fibers by their unique optical properties. SEM is used to identify asbestos by penetrating a thin sample with an electron beam. SEM is the more accurate method for determining the presence of asbestos, and it is especially useful for bulk samples in which the asbestos fibers are bound within the matrix and standard in Germany.

6.1.3 ACM Assessment

The FGS for Germany require that the urgency of abatement of ACM be determined using a standard form. The risks are assessed by criteria such as asbestos type, surface structure, location of the asbestos product, and use of the area/room. Classification points are assigned to each criterion. The sum of these classification points yields the urgency of abatement as follows:

≥ 80 points: Urgency Level I:
immediate abatement required,

70 to 79 points: Urgency Level II:
medium-term reassessment required (< every 2 years),

< 70 points: Urgency Level III:
long-term reassessment required (< every 5 years).

If the urgency of abatement determination yields Urgency Level I, immediate abatement is required, because a significant hazard is present. In case the immediate and complete abatement is not possible, immediate measures to reduce the release of asbestos fibers must be taken. If the Urgency of Abatement determination yields Urgency Levels II or III, the abatement will only be required when subsequent reassessments result in Urgency Level I.

6.2 PERIODIC REINSPECTION/SURVEILLANCE

O&M programs must be implemented for facilities where friable ACM has been identified. The FGS for Germany require reassessment of ACM if the initial Urgency of Abatement determination yields Urgency Levels II or III. Such reassessments are to recur at least once every two years, in the case of Urgency Level II, and, at least once every five years in the case of Urgency Level III.

6.3 DOCUMENTATION & RECORDKEEPING

A complete record of asbestos inspection records is assembled and maintained by the AMT. The information contained in the file for each installation, building, and facility on the 411th BSB is readily available for review by personnel responsible for facility alteration, renovation, and construction projects, health and safety programs, contractor and employee notification, and maintenance. When contractors are used for inspections, surveys, maintenance services, demolition or construction, ACM abatement, or waste transportation and disposal, final payment should be contingent upon the receipt of all required asbestos-related documentation.

According to PWTB 420-70-8, all records pertaining to an asbestos abatement should be kept in a permanent file and maintained indefinitely at the DPW-EMO office.

7 OPERATIONS AND MAINTENANCE PROCEDURES

Whenever any friable ACM or asbestos-containing TSI is present in a building, operations and maintenance (O&M) activities must be initiated. An O&M program will immediately be implemented if the laboratory analysis of bulk/wipe samples confirms the presence of asbestos in sampled materials. The O&M program is designed to: perform an emergency response action clean up of asbestos fibers that have been released, minimize disturbance of, or damage to, ACM through encapsulation or enclosure of the material. If this is not possible, room closure is necessary in order to keep possible fiber release to an absolute minimum and building employees/occupants shall be informed about the proper methods of working with ACM. The O&M program will remain in effect until all ACM is removed or the building is demolished.

7.1 O&M WORK PRACTICES AND ENGINEERING CONTROLS

The effectiveness of the O&M program depends upon the awareness of building occupants and workers of the presence and condition of ACM. Custodial and maintenance personnel must be trained in proper techniques for cleaning and maintaining building areas that contain non-friable ACM. In general, personnel must avoid working on asbestos products with tools that remove the product surface through sanding, high pressure cleaning, or scraping. Should any O & M personnel come in contact with any suspect ACM that is damaged, they shall notify the AMP immediately and receive instructions on how to proceed with the material before beginning work of any kind. An Asbestos Awareness booklet has been prepared by the DPW-EMO office to provide O & M personnel with information on asbestos and what procedures to take, if it is found. This information is provided in English and German languages for copying and distribution to all affected and responsible BSB employees. The 411th BSB does not abate asbestos containing materials in house.

7.1.1 Initial Cleaning Using a High Efficiency Particulate Air (HEPA) Vacuum

Unless a building has been cleaned using appropriate methods within the last six months, all areas of the building where friable ACM, damaged or significantly damaged asbestos-containing TSI, or friable PACM are present should be cleaned at least once after the initial inspection has been completed and prior to initiation of any response action other than O&M activities and repair. Custodial staff will perform initial cleaning. A HEPA-filtered vacuum cleaner, not a conventional vacuum cleaner, should always be used to clean areas where ACM is present. The used HEPA filters and vacuum cleaner bags should be placed in plastic bags and sealed for disposal as ACM-contaminated waste in accordance with applicable regulations. HEPA vacuuming procedures are as follows:

- a. For floors, use a floor attachment with rubber floor seals and adjustable floor-to-attachment height. Use a crevice brush or other tool(s) to clean irregularly shaped surfaces.
- b. Vacuum hard or smooth surfaces with the attachment set 1/16 inch above the surface.
- c. For furniture, fabrics, or other surfaces, use an upholstery attachment or brush attachment. Vacuum the carpet or fabrics with the attachment just touching the surface.
- d. Vacuum all surfaces in parallel passes with each pass overlapping the previous by one-half the width of the attachment.
- e. Once surfaces are cleaned in one direction, clean a second time at right angles to the first cleaning.
- f. Every effort will be made to thoroughly clean textile material. If they cannot be cleaned then non-cleanable textiles (i.e. carpeting, insulation materials, cloth furniture) shall be disposed of in accordance with TRGS 519, Section 13 (Waste).

7.1.2 Steam Cleaning Carpet

Affected areas throughout the building will be steam cleaned with a HEPA-filtered vacuum cleaner. Carpet steam cleaning procedures are as follows:

- a. Steam clean carpet using a carpet tool.
- b. Steam clean all surfaces in parallel passes with each pass overlapping the previous one by one-half the width of the attachment.
- c. Once surfaces are cleaned in one direction, clean a second time at right angles to the first cleaning.
- d. Water from the cleaning process should be properly treated and/or disposed of.

7.1.3 Polyethylene Drop Cloth

Preparing a work area with a drop cloth requires that a single layer of polyethylene be spread on the floor of the work area and taped or weighted in place. Use more than one layer if ladders or similar equipment will be used, and place a temporary hard surface such as plywood over the drop cloth. If the floor is a soft material (e.g., carpet), use caution to prevent the tearing of polyethylene under equipment. The drop cloth should be large enough to catch falling debris.

If work is to be performed at an elevated level, the drop cloth should be placed on the work platform or extended at ground level beyond the immediate work location to catch any debris that might be generated. Note that the use of a drop cloth introduces potential slip hazards in the work area. Non-slip foot coverings are recommended where drop cloths are used.

7.1.4 Local Exhaust Ventilation Using Negative Pressure Systems and HEPA Filters

Enclosure systems should be provided with a negative pressure system (pressure differential system) to reduce the possibility of fibers being released from the enclosure during the work and to filter inside air discharged from the enclosure. Negative pressure inside mini-enclosures is provided by a HEPA-filtered vacuum or negative pressure machine(s) depending upon the size of the enclosure. The National Institute of Building Sciences (NIBS) *Asbestos Abatement and Management in Buildings: Model Guide Specifications*; Section 01413, "Temporary Pressure Differential and Air Circulation System" provides guidance on pressure differential systems and suggested rates of air circulation in terms of air changes per hour. A HEPA vacuum usually will provide sufficient negative pressure for a small enclosure. Larger enclosures might require larger negative pressure machine(s) to achieve the required negative pressure.

A negative pressure system for a mini-enclosure most commonly locates the HEPA vacuum or negative pressure machine outside the enclosure. The intake side of the unit is ducted to the enclosure through the vacuum hose or flexible duct material is taped to a hole in the enclosure on the side opposite from the change room or as close as possible to where the work will be performed. The filtered exhaust side of the unit should be ducted to the outside if possible. Most vacuum units do not provide a connection for an exhaust duct and are commonly exhausted to the inside. Additional protection might be desirable for an area where the air is exhausted to the inside of a building.

7.2 GENERAL O&M WORK PROCEDURES

The following section is included to provide guidance to personnel for conducting maintenance, repair, and minor renovation work on or near asbestos in accordance with an established asbestos management program and applicable HN regulations. The APM will work with individual activity environmental coordinators, shop foremen, and managers to develop O&M procedures specific to their facilities and activities.

7.2.1 Setting Up Work Areas

It should be noted that polyethylene work area protection is not to replace other engineering controls and good work practices. Work practices such as wetting ACM, careful handling, local collection by HEPA vacuum, and local exhaust

ventilation should be the primary means of fiber control during asbestos work activities. Polyethylene protection, glove bags, and mini-enclosures are intended as a secondary means of protection during the work activities.

Preparation of work areas for asbestos work activities typically involves the use of a polyethylene drop cloth or mini-enclosure. Other techniques, such as the use of a glove bag taped over a self-supporting framework or a “glove box” enclosure, might also be used as a substitute for these methods where appropriate.

7.2.2 Cleaning

Tools and equipment shall be cleaned using HEPA vacuuming and/or wet-wiping procedures. Special attention should be given to cleaning extension cords, equipment wheels, vacuum hoses, and other items that could pick up debris during the asbestos work activities. Tools and equipment should be placed outside of the work area as soon as cleaning is completed to prevent recontamination. Drop cloths and mini-enclosures can be cleaned or disposed of as ACM. Items that cannot be completely cleaned and that may be used on another asbestos work site can be placed in disposal bags, sealed, and labeled. These bags should be wet wiped and placed outside the work area. Similarly, HEPA vacuum hoses can be sealed with tape over both ends and cleaned prior to being placed outside the work area.

Cleaning of the work area where an asbestos work activity is conducted consists of HEPA vacuuming and/or wet wiping all surfaces in the area.

7.2.3 Wet Wiping

The procedures to be used for wet wiping are as follows:

- a. Immerse disposable towel in bucket containing amended water (see Definitions).
- b. Wring out the towel and fold into quarters.
- c. Wipe the surface and refold the towel to expose a clean face. Do not place the towel back in the amended water or it will become contaminated and will need to be replaced.
- d. Repeat step c until all faces of the towel have been used. Obtain a clean towel if more wiping is needed.
- e. Dispose of used towels in disposal bags.
- f. Dispose of contaminated water appropriately.

7.2.4 Glove Bag

Glove bags are intended for one-time use, generally for removing ACM from piping, and are commercially available in many different sizes and shapes for use in horizontal, vertical, or other special applications. Standard glove bags will melt on surfaces above 49° Celsius. Special glove bags are available for use on high-temperature piping or similar surfaces. Other types of prefabricated removal enclosures include “glove box” type enclosures, multiple glove bag assemblies, glove bags with self-supporting frames, and glove bags that funnel waste into standard disposal bags.

The following procedures should be followed during glove bag use:

- a. Check the area where the work will be performed. If damaged ACM is present (broken, lagging, hanging, etc.), wrap in polyethylene and seal with duct tape. Place one layer of duct tape around the removal area where the glove bag will be attached. Also, protect any damaged ACM outside the glove bag area that could be disturbed during the work.
- b. Slit open the top of the glove bag if necessary and cut down the sides to accommodate the removal area.
- c. Place necessary tools into the pouch inside the glove bag. Tools typically needed include: scraper, utility knife, disposable towels, nylon brush, wire cutters, tin snips, and pre-wetted lag cloth. Cut the lag cloth to sizes needed to cover any ACM that will remain after glove bag work is completed.
- d. Place one strip of duct tape along the edge of the open top slit of the glove bag for reinforcement. Place the glove bag around the area to be worked on and staple the top together through the reinforcing tape. Provide 8 to 12 inches of space inside the glove bag between the removal surface and the glove bag for working room. Secure the glove bag to the previously installed duct tape around the removal area. Use a smoke seal and aspirator bulb to test the seal.
- e. If a negative pressure glove bag with a supporting framework and HEPA filtered makeup air port are being used, attach the hose from an operating HEPA vacuum to the glove bag to provide negative pressure in the glove bag.
- f. Insert the wand from the garden sprayer with amended water through the water sleeve. Duct tape the water sleeve tightly around the wand to prevent leakage. Insert arms into the glove bag.
- g. Remove any metal jacket or covering over the area where removal is required using tin snips and/or wire cutters. Fold in any sharp edges

to avoid cutting the bag. Pierce any painted coverings to permit water to soak into the ACM. Adequately wet the material to be worked on with amended water and allow to soak in. Wet adequately to penetrate and soak material through to the substrate.

- h. Cut the insulation section to be removed with a utility knife. Use caution to avoid cutting the glove bag. Throughout this process, spray amended water or removal encapsulant on the cutting area to keep dust to a minimum.
- i. Remove insulation using a scraper or other necessary tools. Place pieces in the bottom of the bag without dropping. Rinse all tools with amended water inside the bag and place them back into the pouch or a sleeve of the glove bag turned inside out.
- j. Using a nylon brush, disposable towels, and amended water, scrub and wipe down the removal area.
- k. Seal exposed ACM around the removal area using a pre-wetted lag cloth or a bridging encapsulant. Use suitable, high-temperature encapsulants for hot piping.
- l. Wash down the inside of the glove bag with amended water and wipe as necessary to move all debris and residue to a lower part of the glove bag (below where the bag will be twisted and cut off).
- m. Remove the water wand from the water sleeve, twist the water sleeve closed, and seal with duct tape. From outside the bag, pull the tool pouch or sleeve away from the bag and twist the pouch to seal it from the rest of the bag. Place duct tape over the twisted portion and then cut the tool pouch from the glove bag, cutting through the twisted/taped section.
- n. Contaminated tools (still contained in the tool pouch enclosure) might then be placed directly into another glove bag without cleaning. Alternatively, the tool pouch with the tools can be placed in a bucket of water, opened underwater, and cleaned.
- o. Evacuate air from the glove bag using a HEPA vacuum. While operating the HEPA, twist the bag several times and tape it to keep the removed insulation in the bottom of the bag during its removal from the area.
- p. Place a 6-mil disposal bag over the glove bag (still attached to the removal area). With the hose of an operating HEPA vacuum inserted in the upper part of the glove bag, remove tape or cut the bag, open the top, and fold it down into the disposal bag. Seal the disposal bag.

Glove bags on self-supporting frames can be used for asbestos work activities on surfacing materials and may be adaptable for other types of ACM. The general procedures for using these units are as follows:

- a. Construct a rectangular or square frame from small-diameter PVC or ABS pipe. Supporting legs can be made of lengths of pipe and fittings as needed to achieve the required height. Proprietary frames with telescoping legs are available.
- b. To install the glove bag on the frame, fold the top edge of the bag over the frame sides and extend the open edge of the bag at least 10 inches beyond the frame. Secure the open edges to the rest of the bag using the duct tape. Place tools and supplies needed in the tool pouch inside the glove bag.
- c. Place the frame and glove bag assembly below the work location so that the frame is close to, but not touching, the ACM. Location and proximity of the frame to the ACM should allow for some movement without disturbing ACM during the asbestos work activities. Insert the garden sprayer wand with amended water into the bag and seal in place.
- d. Cut a hole in the glove bag for the negative pressure equipment hose. Negative pressure equipment could be a HEPA vacuum or a small, negative pressure machine. Install the hose and seal in place. A pre-filter may be needed to prevent any gross ACM debris from being drawn into the negative pressure device.
- e. Install a hose from an operating HEPA vacuum into the bag in a position where it can be used during the work.
- f. Turn on the negative pressure device and smoke test all sides of the glove bag frame to verify negative pressure. If sufficient negative pressure is not present, reduce the clearance between the ACM and frame, or add additional negative pressure device(s).
- g. Insert hands into the glove arms and wet the ACM where the work is required. Perform the work as required. Adequately wet any ACM in the glove bag.
- h. Slowly lower the frame to allow the tools to be removed from the bag. Gently remove the glove bag from the frame and twist to form a neck. Evacuate air from the bag using a HEPA vacuum and tape the bag closed.
- i. Wash down the inside of the glove bag with amended water and wipe as necessary to move all debris and residue to a lower part of the glove bag.

- j. Remove the garden sprayer wand, negative pressure device hose, and HEPA vacuum hose and seal the holes with duct tape. Place the glove bag into a labeled asbestos disposal bag and seal the disposal bag.

7.2.5 Mini-enclosures

A mini-enclosure is usually a polyethylene enclosure around a work area. Mini-enclosures are sealed enclosures used as a secondary means to help contain fibers or debris generated during the work.

Mini-enclosures also serve to provide a visual barrier between the workers and any other personnel around the work area. As noted above, careful work practices should be the primary means of fiber control during the work in order to prevent gross contamination of the mini-enclosure.

There are a variety of commercially available types of mini-enclosures, including prefabricated pop-up boxes and adjustable framework assemblies that permit construction of different sizes of enclosures. Disposable liners for mini-enclosures are also available from some manufacturers.

It is recommended that two workers set up and operate mini-enclosures. To construct an enclosure, erect a framework of wood, PVC piping, or metal framing that will enclose the work area and that is large enough for one person to work inside. The width and depth of the enclosure should be at least 3 feet. The height of the enclosure depends upon the work to be performed and the height of the work area.

If an entire room will be enclosed to perform the work, the framework usually is not necessary, unless wall surfaces will be damaged by tape used to support the polyethylene. A room typically can be enclosed by installing one layer of polyethylene on the walls and two layers on floors, windows, and doors.

If the work to be performed is in an elevated location, the enclosure (and change room, if used) should be erected on a scaffold platform large enough to support the enclosure, change room, and a step-off area outside the enclosure. Cover the floor and the framework for the enclosure and change room with one layer of polyethylene attached using duct tape. Cover the floor with a second layer of polyethylene and attach to facilitate cleanup and to reduce the probability of tearing and subsequent contamination when equipment is used.

Construct curtain doorways between the change room and the enclosure and between the change room and the area outside. A curtain doorway is made of three overlapping sheets of polyethylene. These three sheets should be attached to the framework at the top and along one side, alternating sides with each separate sheet. A sheet of polyethylene approximately 5 feet by 5 feet or

larger should be placed outside the change room for use as a step-off area and as a place to put decontaminated materials removed from the work area.

Enclosures should be constructed with a ceiling of polyethylene if work will not be performed above the enclosure. If work is to be performed above the enclosure and the ceiling is not ACM, the enclosure should be sealed to the ceiling or grid system. If the enclosure is below an ACM finished surface, use one of the following methods:

If the ACM cannot be contacted, the enclosure should be separated from the ceiling by a narrow space.

If ACM will withstand contact without damage and is in good condition, foam tape (1 inch or thicker) can be placed on the top edge of the enclosure. Gently lift the enclosure into place until sufficient contact is made to provide a seal to the surface.

After the enclosure is in place, check for and clean up any debris generated by enclosure installation. Enclosures should be set up with a negative pressure system as described below to reduce the possibility of fiber release from the enclosure.

7.3 SELECTION AND USE OF RESPIRATORY PROTECTIVE EQUIPMENT

The appropriate type of respirator must be provided for each class of asbestos abatement at no cost to the workers who may be exposed to airborne asbestos. The following table, derived from 29 CFR 1926.1101, describes appropriate respirator types for various levels of airborne asbestos:

Table 7-1 Airborne concentration of asbestos

AIRBORNE CONCENTRATION OF ASBESTOS	RESPIRATOR
< or = 1.0 f/cc	Half-face air purifying respirator (APR) with high efficiency filters
< or = 5.0 f/cc	Full-face APR with high efficiency filters
< or = 10 f/cc	Full-face APR with high efficiency filters or supplied air respirator operated in continuous flow mode
< or = 100 f/cc	Full-face supplied air

AIRBORNE CONCENTRATION OF ASBESTOS	RESPIRATOR
	respirator operated in pressure demand mode
> 100 f/cc or unknown concentration	Full-face supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus (SCBA)
Note: A high efficiency filter must be at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.	

7.4 PROTECTIVE CLOTHING AND EQUIPMENT

Personal protective clothing and equipment should be selected based upon consultation with the BSB Safety Office and upon the requirements of applicable regulations. The following list describes the personal protective equipment (PPE) typically required for asbestos removal projects:

- Hard hat (required if there is a significant overhead hazard);
- Safety glasses or goggles (must be available for activities that may result in eye irritation or injury);
- Disposable protective coveralls (e.g., Tyvek suits);
- Respirators and respirator cartridges;
- Disposable gloves; and
- Safety shoes or boots (e.g., steel/composite toe and shank).

7.5 AIR MONITORING

Collection and analysis of air samples for asbestos fibers is a reliable means of determining the presence or absence of asbestos fibers, at the time of testing, and evaluating whether the concentration of airborne asbestos fiber poses a significant occupational risk. Air monitoring is conducted during asbestos

abatement projects to determine whether airborne fiber concentrations exceed occupational health and environmental limits, and air sampling techniques are employed at the conclusion of asbestos abatement projects to determine whether the space is sufficiently clean to permit reoccupancy.

Selection of the air sampling method depends on the intended use or purpose of the sample analysis results and the applicable regulatory requirements. Typically, two air sampling methods are simultaneously employed: personal sampling uses battery-operated pumps to collect small volumes of air that will be analyzed to evaluate respiratory protection methods; area sampling uses electric-powered pumps to collect larger volumes of air required for routine monitoring and final clearance.

7.5.1 Personal Air Sampling

Air samples are collected within the breathing zone (i.e., the volume of air within a one-foot radius of the nose and mouth) of the potentially exposed individual. The personal sampling pump must be calibrated at a flow rate of 2.0 liters/minute. Air monitoring via personal sampling must be accomplished by an experienced individual such as an industrial hygienist, who will observe the procedures and develop an understanding of the nature of the activities that could result in exposure to airborne asbestos fibers.

7.5.2 Area Air Sampling

Samples collected to characterize the ambient airborne fiber levels require higher volumes and flow rates than personal air samples. Air samples should be collected in an open-face configuration with the open face of the cassette pointed downward at a 45° angle from horizontal at a height of four feet above the floor. Pumps should be placed as near as practicable to the potential source of airborne fiber.

7.6 AUTOMOTIVE BRAKE AND CLUTCH SERVICING

In Germany, asbestos-containing products are classified as hazardous materials. The Army, as an employer, must assess the hazards associated with the handling of ACMs to determine the protective measures that must be implemented. This assessment must be undertaken and the associated protective measures implemented before initiating activity involving ACMs. Every effort should be made to minimize the number of people who may be exposed to asbestos or asbestos-containing dust.

Chapter 15 of the FGS for Germany prohibit the purchase and sale of materials containing fibrous structures, preparations containing more than 0.1 percent asbestos, and products containing such materials or preparations. An exception to this prohibition is chrysotile-containing replacement parts, but only when

asbestos-free substitutes are not available. Asbestos-containing brake or clutch linings may not be installed in the brakes and clutches of motor vehicles if it is technically possible to use asbestos-free linings, and if such linings are available.

Mobile dust filters and industrial vacuum cleaners used in the repair, maintenance, and cleaning of brake and clutch linings and brake drums must satisfy the following requirements:

- The pass-through rate of the filter material or combination of filters may not exceed 0.005 percent.
- The equipment must be approved by the Trades Association (*Berufsgenossenschaft*) via type-certification, or by competent authorities.

When worn friction surfaces are dismantled, the friction dust must be vacuumed using a Category K1, type-certified device or its equivalent. The use of compressed air to blow away particles is prohibited. Dust binding or wet cleaning may be used if the cleaning agent does not negatively affect the braking performance. To the extent possible, worn surfaces should be removed from their holders as an entire piece. The removed coatings, friction surface remnants, and the vacuumed dust must be packed in a dust-free container and disposed of in a manner that does not create emissions.

If asbestos-containing brake surfaces must be ground to correct specifications without removal, then a slowly revolving grinding device should be used. Excessive grinding is prohibited. During grinding, a Category K1, type-certified device or its equivalent should be used to vacuum off the dust. For the maintenance of clutch linings, the same general procedures used for brake systems apply.

8 TRAINING

This chapter addresses the training requirements for all Army and civilian personnel who will participate in asbestos-related activities at the BSB. In order for the AMT to prepare and implement the AMP, the team members who will be actively involved in the technical aspects of the AMP must be appropriately trained in accordance with Host Nation and US Laws and Regulations.

8.1 TRAINING REQUIREMENTS

AHERA established a Model Accreditation Program (MAP) that described the minimum training standards for individuals managing asbestos in schools. With the passage of the Asbestos School Hazard Abatement Reauthorization Act (ASHARA) in 1990, the certain portions of AHERA were extended to include public and commercial buildings. For example, ASHARA extended the training requirements of AHERA

8.1.1 O&M Program Training for Custodial and Maintenance Staff

A worker-training program should be instituted for all employees who are or may be exposed to fiber levels above the OSHA PEL of 0.1 f/cc on an eight-hour TWA basis or the excursion limit of 1.0 f/cc for a 30-minute period. AHERA requires that all custodial staff and maintenance workers receive 16 hours of training. The training must address the steps to be taken to avoid the release of asbestos fibers from ACM. Three levels of training are recognized for O&M programs:

Level I: Awareness Training

This training is designed for custodians and maintenance workers whose normal duties would not bring them into contact with ACM; they may, however, disturb ACM accidentally. Awareness training can range from two to eight hours in length and addresses the following topics: background information on asbestos; health effects, worker protection, location of ACM in the building; recognition of ACM damage and deterioration; the building O&M program; and proper response to fiber release episodes.

Level II: O&M Training

This training is designed for workers involved in general maintenance and asbestos material repair. At least 16 hours of instruction is required. The O&M training should cover Level I topics in more detail as well as: asbestos regulations; proper asbestos work practices; methods of handling ACM, including waste handling and disposal; respirator use, care, and fit testing; protective clothing donning, use, and handling; and hands-on exercises in

techniques such as glove bag removal, HEPA vacuum use, and maintenance; and appropriate decontamination practices.

Level III: Abatement Worker Training

This training is designed for asbestos abatement workers who will come into direct, intentional contact with ACM to remove, encapsulate, or enclose it. Level III requires 24 to 32 hours of instruction and should be provided to in-house personnel assigned to asbestos abatement projects. Level I and II topics should be addressed in Level III instruction; however, more emphasis should be devoted to the following topics:

- a. Pre-abatement work activities;
- b. Work area preparation;
- c. Establishing decontamination units;
- d. Personal protection, including respirator and protective clothing;
- e. Worker decontamination procedures;
- f. Safety considerations in the abatement work area;
- g. Practical, hands-on exercises; and
- h. Proper handling and disposal of ACM wastes.

Each worker should receive a certificate of training for each level of training completed. Copies of the training certificates will be required for the records of an asbestos abatement project.

8.1.2 Asbestos Building Inspector/Management Planner

Individuals conducting building inspections must complete a three-day course to obtain certification. Certified inspectors are permitted to conduct ACM inspections and surveys, collect bulk samples, and perform assessments of ACM. The leader of each field asbestos survey team must be a certified inspector; however, other individuals on the same team need not be certified.

Individuals responsible for interpreting inspection data and determining response actions must complete the two-day Management Planner course. Inspectors and management planners must complete an annual refresher course to maintain their certifications. Each refresher course is four hours, and usually the management planner refresher course immediately follows the inspector refresher course.

8.1.3 Asbestos Worker

Asbestos abatement workers must receive four days of training, including basic asbestos abatement procedures, regulations, health effects of exposure, and worker safety. Workers must receive eight hours of refresher training annually.

8.1.4 Asbestos Contractor/Supervisor

Asbestos abatement contractors and supervisors must receive five days of initial training, including basic asbestos abatement procedures, regulations, health effects of exposure, and worker safety. Contractors/supervisors must receive 8 hours of refresher training annually.

8.1.5 Project Designer

An individual seeking certification as a project designer must have, as a minimum, the supervisor training course. The project designer will develop drawings and specifications for abatement projects.

8.1.6 Project Monitor

An individual seeking certification as a project monitor must have, as a minimum, the supervisor training course. The project monitor will be capable of collecting personal and area air samples and inspecting the abatement work for compliance with regulations and project specifications.

8.2 ADDITIONAL TRAINING/INSTRUCTION

The FGS for Germany require that an instruction sheet, specific to a particular workplace and the associated ACM contained therein, be provided to workers. The instruction sheet is to be written in a comprehensible manner, in the language of the employees, and posted at a suitable location at the workplace. The instruction sheet must draw attention to the dangers to human health and the environment associated with the handling of ACM. At a minimum, the instruction sheet shall address personal protective measures and procedures, the proper disposal of generated hazardous wastes, emergency procedures, and first aid measures.

The FGS for Germany also require that an informative session (i.e., awareness training) be provided to workers handling ACM in the workplace prior to initiating work activities and at least once a year thereafter (for long duration work activities). The awareness training may be given verbally and must include specific reference to the workplace (i.e., the particular locations and types of ACM present). The contents of the awareness training and the time the training was conducted must be recorded in writing and confirmed by the instructed persons by means of their signature. The proof of training/instruction must be kept for a period of at least two years.

Both the instruction sheet and the verbal awareness training must be organized according to, and address, the following topics:

- Work areas and workplace activities;

- Dangers to man and the environment;
- Protective measures, procedures, and hygiene measures;
- Emergency procedures;
- First aid measures; and
- Proper disposal procedures.

8.3 TRAINING DOCUMENTATION AND RECORD KEEPING

Generating and maintaining complete records of asbestos management activities is essential to keeping the program in compliance with applicable regulations. Complete and accurate records also serve as a valuable management tool for the day-to-day operation of the program. For example, records of past and current operations can be used to help identify and correct compliance deficiencies or to develop improved procedures or processes for future operations. In addition, a detailed record of construction activities will be invaluable in settling contract disputes and health-related litigation.

Records of the following types of activities related to the asbestos management program should be created and maintained at the BSB:

Records of actions taken by the AMT to abate ACM;

Training certificates for in-house and contractor personnel involved in any abatement project;

- ACM inventories and locations compiled from the survey of each building;
- Records of surveillance and reinspection;
- Training activities;
- Personnel responsibilities;
- Asbestos waste storage, transportation, and disposal;
- Changes to operating procedures; and
- Routine or non-routine maintenance activities (e.g., removal/repair of a section of pipe).

A complete set of records should be kept by the APM. Other individuals or offices may be designated to keep a full or partial set of the program records, as deemed appropriate. All records should be maintained for at least three years after the event that generated the record.

Facilities that manage asbestos-related HW, including HW accumulation points and storage areas, have additional record keeping requirements, which are specified in chapter 6, Hazardous Waste, of FGS for Germany (e.g. Hazardous Waste Accumulation Point and Hazardous Waste Storage Area Record Keeping Requirements).

9 ASBESTOS WASTE DISPOSAL

The asbestos abatement cleanup and clearance processes will directly follow ACM removal. These activities require close cooperation between the AMT and the industrial hygienist (IH) and/or inspector.

Removal of ACM from the work area or work site must be a continuous process, and bags of debris must not be allowed to accumulate at the decontamination area. Bags may be decontaminated and passed through the decontamination unit or through a materials handling unit used exclusively for bags and equipment. As each bag is decontaminated, it must be double-bagged and sealed separately.

9.1 PACKAGING AND LABELING WASTE

Asbestos-containing waste should be packaged in rigid, leak-tight packaging, such as metal, plastic, or fiber drums; in bags; or in other non-rigid packaging that is dust-proof. Storage of asbestos and asbestos-containing waste requires marking and labeling in accordance with the FGS for Germany.

Each package and container of asbestos waste offered for transportation should be marked with the following information: WASTE ASBESTOS; UN2590 (for white asbestos, including chrysotile, actinolite, anthophyllite, and tremolite); UN2212 (for blue asbestos, including crocidolite, and brown asbestos, including amosite); and the name and address of both the generator and the disposal facility.

Packages and containers will be labeled with the following statement in the English and German languages:

**"DANGER - CONTAINS ASBESTOS FIBERS - AVOID CREATING DUST -
CANCER AND LUNG DISEASE HAZARD.**

**ACHTUNG ENTHÄLT ASBEST - GESUNDHEITSGEFÄHRDUNG BEI
EINATMEN VON ASBESTFASERN - SICHERHEITSVORSCHRIFTEN
BEACHTEN - BEHÄLTER GESCHLOSSEN HALTEN."**

The DPW-EMO maintains a storage building where materials such as labels are stored. POC for labels and signs is Yvonne Lamy, Asbestos Program Manager.

The co-mingling or combining of asbestos-containing wastes with non-asbestos-containing wastes prior to landfilling is prohibited by the FGS for Germany. One exception to this requirement is the co-mingling of asbestos cement pipes with non-asbestos-containing waste, as this is at times unavoidable. If asbestos

cement pipes are to be co-mingled with non-asbestos containing wastes, it must be done in a manner that ensures that no asbestos fibers are released.

Asbestos-containing wastes are to be collected at the workplace in such a manner that the transfer of waste between containers and/or enclosures is minimized to the maximum extent practical so as to minimize the potential for asbestos fibers to be released. When collecting and preparing asbestos-containing waste for transportation, the release of dusts is to be prevented by means according to the current state of the art of technology (e.g. exhaust ventilation, consolidation, moistening, covering).

Asbestos-containing wastes in storage must be kept moist or covered using suitable materials, or kept in sealed, leak proof containers and secured to prevent the access of unauthorized persons.

Asbestos-containing wastes must be secured for transportation in such a manner that no asbestos fibers are released during transportation and loading/unloading.

9.2 REGULATED ASBESTOS LANDFILLS

The FGS for Germany require that all hazardous wastes, including asbestos, be disposed of in a permitted German disposal facility. The disposal of asbestos, ACM, asbestos waste, and asbestos-contaminated liquids at appropriately licensed landfills and treatment facilities will be conducted in consultation with the responsible local waste authorities. The materials will be handled, packaged, and covered in such a way as to ensure that no asbestos fibers can be released into the environment. Prior to transporting sprayed-on asbestos and other friable asbestos waste off-site, a hydraulic binder material (e.g., cement) will be utilized at the point of generation. ACM waste containing only nonfriable asbestos fibers will be kept moist during packaging and transport to avoid the creation of asbestos-containing dust.

FACILITY NAME	LOCATION/ADDRESS	POC & PHONE
Abfallerwertungsgesellschaft des Rhein-Neckar-Kreis-mbH	Muthstr. 4 74889 Sinsheim	Tel. 07261-9310 Fax 07261-931188
Deponie Friesenheimer Insel	Diffenestr. 68169 Mannheim	Tel. 0621-3224830

9.3 ASBESTOS WASTE MANIFESTS

Shipping papers must accompany each shipment of asbestos-containing waste and must include a description of the waste material. An asbestos waste manifest may serve as a shipping paper, and the manifest must include: the name of the waste generator, the location at which the waste was generated, the name of the shipper or hauler, an emergency response telephone number, and the description and quantity of asbestos waste contained in the shipment.

The disposal site operator must receive a copy of the manifest or shipping paper upon delivery of the waste to the disposal facility (see Appendix A).

10 BSB FACILITIES SUBJECT TO AHERA

According to the USAREUR Environmental Compliance Assessment Manual (3 April 1995, Section E: 15-23), the AHERA regulations apply to U.S. Department of Defense Dependent Schools (DoDDS) and Child Development Centers (CDCs) on military bases in foreign countries. In accordance with the AHERA regulations, each school and CDC facility must designate someone to ensure that the requirements are properly implemented. The designated person will initiate and oversee activities including: inspection to identify ACM, monitoring and periodic reinspection, development and update of management and O&M plans, determination and implementation of response actions, notification of parents, building occupants, and contractors, and training/accreditation of personnel.

10.1 DEPARTMENT OF DEFENSE DEPENDENT SCHOOLS (DoDDS)

Asbestos Surveys have been conducted at all DoDDS facilities at the 411th BSB and DoDDS facility-specific AMPs have been developed for those DoDDS facilities that were identified as containing ACM. These surveys and plans are maintained at the individual DoDDS facilities and were developed by DoDDS as a separate initiative to this AMP. These surveys and plans are incorporated by reference in this AMP.

1. Name of School: Heidelberg High School
Location: Building 3744, Mark Twain Village
Date of Inspection Report: 1988, 1991, 1994, 1997 & 2001
Date of Management Plan: 2003
2. Name of School: Elementary School
Location: Building 3799, Mark Twain Village
Date of Inspection Report: 1988, 1991, 1994, 1997 & 2001
Date of Management Plan: 2003
3. Name of School: Middle School
Location: Building 4460, Patrick Henry Village
Date of Inspection Report: 1988, 1991, 1994, 1997 & 2001
Date of Management Plan: 2003
4. Name of School: Elementary School
Location: Building 4498, Patrick Henry Village
Date of Inspection Report: 1988, 1991, 1994, 1997 & 2001
Date of Management Plan: 2003

5. Name of School: Elementary School
Location: Building 4499, Patrick Henry Village
Date of Inspection Report: 1988, 1991, 1994, 1997 & 2001
Date of Management Plan: 2003

10.2 CHILD DEVELOPMENT CENTERS

1. Name of School: Child Support Center
Location: Buildings 4442 & 4443, Patrick Henry Village
Title and Date of Inspection Report: 1997 – Schwarz, Hanson & Partner GmbH
2. Name of School: Youth Center
Location: Building 4533, Patrick Henry Village
Title and Date of Inspection Report: 1999 – Schwarz, Hanson & Partner GmbH
3. Name of School: Child Development Center
Location: Building 3654, Mark Twain Village
Title and Date of Inspection Report: 1997 – Schwarz, Hanson & Partner GmbH
4. Name of School: Child Development Center
Location: Building 3797, Mark Twain Village
Title and Date of Inspection Report: 1997 – Schwarz, Hanson & Partner GmbH

11 EVALUATION OF RESOURCE REQUIREMENTS

The 411th BSB, Heidelberg AMT will maintain current information on asbestos management resources, supplies, and services in this section for budgeting purposes.

11.1 ABATEMENT ACTIVITY COSTS

Table 11-1 Table 11-1. Current Prices for Asbestos Abatement Services using containment measures

TYPE OF ACM	CONTRACTOR INFORMATION	PRICE TO ABATE/REMOVE
Vinyl Floor Tile	Zenith Environmental – POC Burley Melton- Tel. 0173-2603585	\$ 22.54 per M ² (≥ 80 M ²) \$ 76.46 per M ² (≤ 80 M ²)
Vinyl Floor Tile with mastic	Zenith Environmental – POC Burley Melton - Tel. 0173-2603585	\$ 25.76 per M ² (≥ 80 M ²) \$ 101.95 per M ² (≤ 80 M ²)
Asbestos Cement Panels	Zenith Environmental – POC Burley Melton - Tel. 0173-2603585	\$ 7.51 per M ² (≥ 200 M ²) \$ 11.80 per M ² (80 - 200 M ²) \$ 25.76 per M ² (≤ 80 M ²)
Pipe Insulation ≤ DN 50	Zenith Environmental – POC Burley Melton - Tel. 0173-2603585	\$ 50.44 per M ² (≥ 50 M) \$ 67.07 per M ² (≤ 50 M)
Pipe Insulation - DN 50 - 100	Zenith Environmental – POC Burley Melton - Tel. 0173-2603585	\$ 63.32 per M ² (≥ 50 M) \$ 83.71 per M ² (≤ 50 M)
Pipe Insulation ≥ DN 100	Zenith Environmental	\$ 85.85 per M ² (≥ 50 M) \$ 113.76 per M ² (≤ 50 M)

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13 ACRONYM LIST

ACM	Asbestos Containing Material(s)
ACGIH	American Conference of Governmental Industrial Hygienists
AHERA	Asbestos Hazard Emergency Response Act
AIHA	American Industrial Hygiene Association
AMP	Asbestos Management Plan
AMT	Asbestos Management Team
ANSI	American National Standards Institute
APM	Asbestos Program Manager
AR	Army Regulation
ARPP	Army Respiratory Protection Program
ASG	Area Support Group
ASHARA	Asbestos School Hazard Abatement Reauthorization Act
BSB	Base Support Battalion
CAA	Clean Air Act
CFR	Code of Federal Regulations
CHPPM-EUR	Center for Health Promotion and Preventive Medicine Europe
CONUS	Continental United States
CPAC	Civilian Personnel Advisory Center
DoD	Department of Defense
DoDDS	Department of Defense Dependent School
DoDI	Department of Defense Instruction
DOT	U.S. Department of Transportation
DPW	Directorate of Public Works
DRM	Demolition, Renovation, or Maintenance
DSN	Defense Switched Network
EMO	Environmental Management Office
EQCC	Environmental Quality Control Committee
FGS	Final Governing Standards
HEPA	High Efficiency Particulate Air
HM	Hazardous Material(s)
HN	Host Nation

HS	Hazardous Substances
HMSA	Hazardous Material Storage Area
HW	Hazardous Waste(s)
IH	Industrial Hygienist
MAP	Model Accreditation Program
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIBS	National Institute of Building Sciences
NIOSH	National Institute of Occupational Safety and Health
NVLAP	National Voluntary Laboratory Accreditation Program
OCONUS	Outside the Continental United States
OEBGD	Overseas Environmental Baseline Guidance Document
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PACM	Presumed Asbestos Containing Material
PAO	Public Affairs Office
PCM	Phase Contrast Microscopy
PLM	Polarized Light Microscopy
PMA/IH	Preventive Medical Activity/Industrial Hygiene
POC	Point of Contact
PPE	Personal Protective Equipment
PVC	Poly-Vinyl Chloride
PWTB	Public Works Technical Bulletin
QC	Quality Control
RPP	Respiratory Protection Program
SA	Supplementary Agreement
SCBA	Self-Contained Breathing Apparatus
SEM	Scanning Electron Microscopy
SJA	Staff Judge Advocate
SOFA	Status of Forces Agreement
SOP(s)	Standard Operating Procedure(s)
TB MED	Medical Technical Bulletin
TEM	Transmission Electron Microscopy
TSI	Thermal System Insulation

UEC	Unit Environmental Coordinator
UR	U.S. Army Europe Regulation
USAREUR	U.S. Army Europe
USEPA	U.S. Environmental Protection Agency
VFT	Vinyl Floor Tile

14 DEFINITIONS

The following definitions are provided in addition to those presented in Chapter 15, Asbestos and Artificial Mineral Fibers, of the Final Governing Standards (FGS) for Germany.

Abatement is an action or set of procedures intended to control the release of fibers from ACM, including removal, encapsulation, enclosure, repair, or encasement.

Amended water is that water to which a surfactant or wetting agent has been added to increase the ability of the liquid to penetrate ACM.

Authorized person is any person authorized by the employer and required by work duties to be present in regulated areas.

Building/facility owner is the legal entity, including a lessee, that exercises control over management and recordkeeping functions relating to a building and/or facility in which activities covered by this standard take place.

Certified Industrial Hygienist (CIH) is a person certified by the American Board of Industrial Hygiene in the practice of industrial hygiene.

Clean room is an uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

Competent person is an individual who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure; one who has the authority to take prompt corrective measures to eliminate them.

Containment is the isolation of the work area from the rest of the building to prevent the escape of asbestos fibers during abatement activities. Also known as the "Black Area".

Critical barrier is one or more layers of plastic fitted over all openings into a work area or any other similarly placed seal or physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.

Decontamination area is an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

Disturbance is the result of activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM; includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris (e.g., cutting away small amounts of ACM and PACM in order to access a building component).

Employee exposure is that exposure to airborne asbestos, which would occur if the employee were not using respiratory protective equipment.

Encapsulation is the application of a material that surrounds or embeds asbestos fibers in an adhesive matrix.

Enclosure is the act of constructing an airtight, impermeable, permanent barrier around ACM to control the release of asbestos fibers into the air; also the temporary structure, built to enclose the work area during a large-scale ACM removal project, where negative pressure is maintained.

Equipment room is a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment (also known as the changing room).

Exposure assessment is an evaluation performed by a competent person in order to predict whether exposure levels during a planned asbestos activity will likely exceed the PEL or other regulatory standard, and, if so, whether additional monitoring, protective equipment, or precautions are required.

Facility is a DoD-controlled area or structure on an installation where a unit or other organization's activities take place.

Friable is a descriptive term indicating that a material is capable of being crumbled, pulverized, or reduced to powder by hand pressure. (Note: the definition includes previously nonfriable material that is broken or damaged by mechanical force).

Glove bag is an impervious plastic/polyethylene/polyvinyl chloride bag-like enclosure, no larger than 60 x 60 inches, having glove-like appendages through which material and tools may be handled, that is designed to be affixed around an asbestos-containing material.

High Efficiency Particulate Air (HEPA) filter is a filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

Homogeneous area is an area of surfacing material or thermal system insulation that is uniform in color and texture.

Industrial Hygienist is a professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.

Intact is a descriptive term for ACM that has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

Installation is a DoD-controlled location or site within the BSB on a single parcel of real estate having defined boundaries.

Modification is a changed or altered procedure, material, or component of a control system, which replaces a procedure, material, or component of a required system.

Operations and Maintenance (O&M) is a program of work practices implemented to maintain friable ACM in good condition, to ensure that fibers previously released are cleaned up, and to prevent further release of asbestos fibers by minimizing and controlling ACM disturbance and damage.

Permissible Exposure Limit (PEL) is an airborne concentration of asbestos established by OSHA such that the employer should ensure that no employee is exposed to levels exceeding the PEL as an 8-hour time-weighted average (TWA); the OSHA PEL is 0.1 fibers per cubic centimeter (f/cc) of air.

Presumed Asbestos Containing Material (PACM) is any material to be treated as asbestos, unless tests prove otherwise. Materials determined to be PACM are those non-friable materials generally considered to be asbestos containing materials such as asbestos cement products, gasket material.

Reassessment is the act of evaluating, by means of visual inspection and/or by touch, the condition of ACM; reassessment is used to determine the urgency of abatement as described in Chapter 15 of the FGS for Germany.

Regulated area is a physical location established by the employer to demarcate the areas where asbestos work is conducted; includes any adjoining area where debris and waste from such asbestos work accumulated and any work area where airborne concentrations of asbestos exceed or may possibly exceed the PEL.

Removal describes all operations where ACM and/or PACM is taken out or stripped from structures or substrates; includes demolition operations.

Renovation is the modification of any existing structure or portion thereof.

Repair is the overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

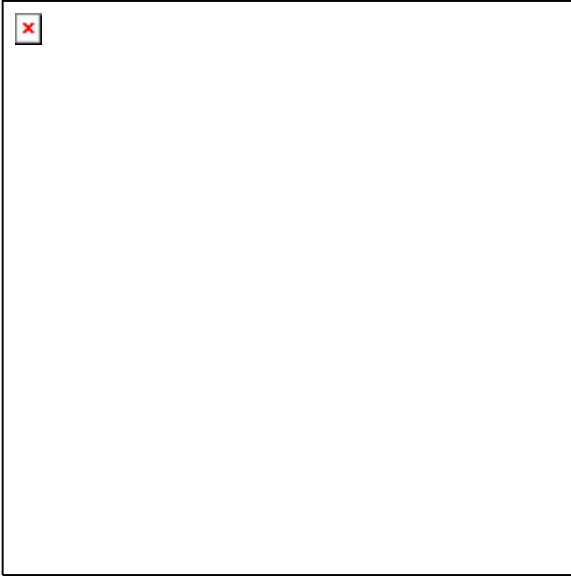
Response action is an action implemented to protect human health and the environment from friable ACM.

Surfacing material is material that is sprayed, troweled-on, or otherwise applied to surfaces (e.g., acoustical plaster on ceilings, fireproofing on structural members).

Thermal System Insulation (TSI) is ACM applied to pipes, fittings, boilers, breeching, tanks, ducts, or other structural components to prevent heat loss or gain.

Time-weighted average is the average concentration of a contaminant in air during a particular sampling or work period.

APPENDIX A
SAMPLE FORMS



APPENDIX B

BSB TRAINING DOCUMENTATION

APPENDIX C

BSB INSPECTION/SURVEY INFORMATION

APPENDIX D

DODDS ASBESTOS MANAGEMENT PLANS

APPENDIX E

SOPS FOR ASBESTOS-CONTAINING BRAKE SHOES

APPENDIX F

FAMILY HOUSING NOTIFICATION FLOW CHART